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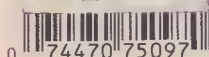
THE ENVIRONMENTAL JOURNAL



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SPECIAL SECTION: 1991 DIRECTORY TO ENVIRONMENTAL ORGANIZATIONS
PANTHERS • JANE GOODALL'S DILEMMA • THE ANIMAL RIGHTS QUESTION
MINORITIES' CRUSADE • THE ENVIRONMENTAL IMPACT OF THE GULF WAR
URBAN WILDLIFE • ECO-YARD CARE • LLAMA TREKKING FOR WILDFLOWERS



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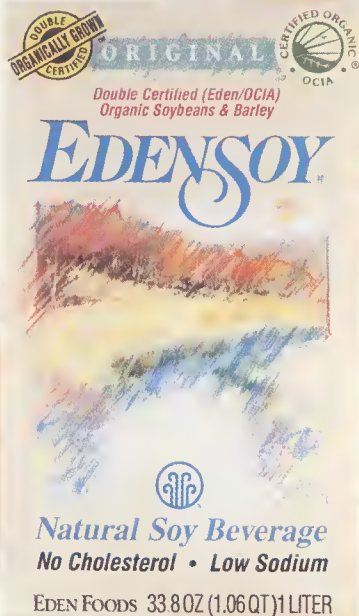


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BUZZWORM

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The animal rights cause is one of the more visible political pressures in support of furry creatures. But is it part of the environmental movement?
By Margaret Knox • Illustrations by Brian Fencil

ECOPROFILE

38 MOORE TAKES ON ALL

The director of the SouthWest Organizing Project, Richard Moore is in search of a better life and a cleaner environment for a majority of minorities.
By Conger Beasley Jr.

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The last 30 to 50 Florida panthers stalk a future—with or without human intervention. Only time will tell if they will succeed.
By Chris Bolgiano

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53 DEATH IN THE GULF

The embered ghosts of war's environmental casualties will float through the Persian Gulf for years. What couldn't we protect with superior technology?
By T.A. Roberts

SPECIAL REPORT

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BUZZWORM's annual look at environmental organizations, providing the big and small of the groups that are working for the Mother of all.

ECOVENTURE

84 GENTLE PASSION

The allure of Colorado wilderness: visions of wildflowers and timeless days at 12,000 feet. It's even better when a llama carries your gear.
By JC Leacock

On the cover: Frodo, a teenage chimpanzee at Jane Goodall's Gombe, Tanzania research station, sparkles with raindrops from a brief tropical shower. The use of chimps in medical research fuels the fury of the animal rights movement. Photo: Gerry Ellis/The Wildlife Collection

Opposite: Covered in oil, a small grebe lies helpless on the shore of Abu Ali peninsula on the Persian Gulf. A massive oil spill, caused by an act of eco-war in Kuwait, has killed thousands of birds and threatens the region's delicate ecosystem. Photo: J. Scott Applewhite/AP-Wide World Photos

GREETINGS



BUZZWORM staffers Fran Meneley and Ann Carey promoting the product.

The art of magazine publishing is not only the marriage of insightful writing and spectacular photography; it is also the promotion of the final product. In that respect spring and summer are especially busy periods for BUZZWORM. There are several trade shows, like the Natural Foods Expo in Anaheim, the Outdoor Retailers Expo in Reno and The American Library Association show in Chicago, that are important venues for us to meet with advertisers and distributors. We also attend consumer shows like the *San Francisco Chronicle* Great Outdoor Adventure Fair in San Francisco and the ambitious Eco Expo that debuts in Los Angeles on April 12-14, moving to Denver, June 28-30, New York, September 6-8, and Atlanta, December 6-8. Billed as the "National Marketplace for the Environment," Eco Expo promises to be the largest gathering of environmental interests ever assembled under one roof. These consumer shows give us a rare opportunity to meet with our readers face to face. If you have the opportunity to attend one of the shows, please come visit our booth. We look forward to meeting with you and hearing your feedback on BUZZWORM.

Essayist Margaret L. Knox is back this issue with a sizzling analysis of the animal rights cause and its relationship with the environmental movement as a whole. Illustrator Brian Fencil documents the dark torment and suffering that makes this such an emotional issue. And, author Sy Montgomery rounds out the story with a short look at Jane Goodall, a voice of moderation in the confusing tangle of ecology and anthropomorphic empathy. Writer Conger Beasley Jr. also graces our pages again with a profile of Richard Moore, the effective director of SWOP—a southwestern organization dedicated to insuring that the environment in which minorities live and work remains healthy. If you love cats, Chris Bolgiano's report on the disappearing Florida panther will jolt you into action. Scientists agree that there may be less than 50 of the big cats left but they can't agree on how to save them. In our **ECOFOLIO**, biologist T.A. Roberts, author of the eco-thriller *Shy Moon* and the forthcoming *Beyond Saru*, takes a stab at predicting the environmental impact of the Persian Gulf war. Some of the photographs accompanying his account may be difficult to view, but reflect the harsh realities of the war. On a lighter note, photographers JC Leacock and Todd Powell take us on a gentle quest for wildflowers high in the Colorado Rockies. This **ECOVENTURE** has a twist though, in the form of equipment-carrying llamas. So don't worry about your 20-pound tripod or that case of beer. . . .

This issue also includes our third annual Directory to Environmental Organizations. Use it, along with our other 12 regular departments, as your "consumer guide" to environmentalism. Good reading!

Joseph E. Daniel

BUZZWORM

THE ENVIRONMENTAL JOURNAL

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ABOUT OUR NAME

"Buzzworm" is an old western term for rattlesnake. Since a rattlesnake can be thought of as symbolizing a very effective form of communication—it buzzes and you react—we thought it an appropriate name for a publication reporting on the condition of worldwide environmental conservation. We intend for this magazine, and any other publications produced under the stylized BUZZWORM logo, to create a similar reaction toward the preservation of our natural resources.

ABOUT OUR MAGAZINE

BUZZWORM has been, and continues to be, funded entirely through investments from private individuals and through revenues generated from newsstand, subscription and advertising sales. None of BUZZWORM's shareholders are large corporations or special interest groups and the magazine is not affiliated in any way with any environmental or political organization.

As an independent magazine reporting on national and international environmental issues, BUZZWORM strives to offer balanced and comprehensive coverage of the challenges facing the world so that the general reader may thoughtfully and actively respond.

PRINTED ON RECYCLED PAPER

Volume III, Number 3, BUZZWORM: The Environmental Journal (ISSN 0898-2999) is published bimonthly by BUZZWORM, Inc. Editorial and Advertising offices, 2305 Canyon Blvd., Ste. 206, Boulder, CO 80302. Telephone, (303) 442-1969. Second-Class Postage Paid at Boulder, CO and additional mailing offices. ©1991 BUZZWORM, Inc. All rights reserved in all countries. No part of the contents of this magazine may be reproduced by any means without prior written permission of BUZZWORM, Inc. Printed in the United States. Distribution by Ingram Periodicals, Nashville, TN, and American Distribution Services, Northbrook, IL. Unsolicited manuscripts and photos will be considered but must be accompanied by a self-addressed, stamped envelope. Although care will be taken, BUZZWORM, Inc. assumes no responsibility for the return of any unsolicited materials. Editors are not responsible for loss of or damage to manuscripts or photographs while in their possession or in transit, or for views expressed in signed articles. SUBSCRIPTION RATES: United States and Possessions, one year \$18, single copy rate is \$5; Canada, one year \$21, single copy \$6; all other countries, one year \$26 surface mail, \$36 air mail, single copy \$8. Call (800) 825-0061 for subscription information. POSTMASTER: Send address changes to BUZZWORM: The Environmental Journal, P.O. Box 6953, Syracuse, NY 13217. Articles appearing in this journal are indexed in *Environmental Periodicals Bibliography* and the *Readers Guide to Periodical Literature*.

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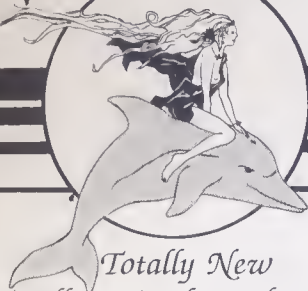
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CIRCLE NO. 22 ON READER SERVICE COUPON PAGE 93

LETTERS

SOBER SHEPHERD

I was deeply disappointed in Charles Bowden's article, *At Sea with the Shepherd* (March/April 1991).

Throughout the piece, alcohol abuse was glamorized. Rum was portrayed as the fuel for the crew's rainbow colors. Refuge was frequently sought in bars. Problems solved with a shot—"Everything else is a detail or a good stiff drink." It made the *Sea Shepherd's* voyage sound like a bunch of bored kids out on a Saturday night with a six-pack, getting boozed bravado then deciding to play chicken.

Bowden didn't miss the opportunity to Greenpeace-bash either—an increasingly popular sport these days, it seems. Clearly both Paul Watson and Chicken Bob Hunter have bundles of sour grapes remaining from their experiences with Greenpeace, but that doesn't justify Bowden's printing of rumors and jabs about the organization's size, activities or funding. Sea Shepherd has often ridden on Greenpeace's wake. If the article was intended to support the Shepherd's work, fine, but need it be at the expense of another group doing excellent ocean ecology protection work?

I was most troubled by the romantic portrayals of Aquagirl and Chicken Bob as willing martyrs for the ocean. I certainly wouldn't want to be a crew member with two drunken people who went on the voyage to die. Their personal desperation should not be confused with commitment to protecting the sea's creatures from driftnets.

Aquagirl is repeatedly quoted as saying that it doesn't matter. On the contrary, for many of us who have chosen to dedicate our lives to protecting the environment, it matters dearly. Personally, I choose to do it sober and nonviolently.

Cynthia Rust
Seattle, WA

NEW NUCLEAR

Christopher Juniper (*Nuclear Genies, Economic Realities*, (March/April 1991)) argues against the use of nuclear energy, pointing to a "failed past," but there is another side, which is why many are not ready to disregard the nuclear energy option.

Electricity accounts for 37 percent of all US energy use, and is a proven way to build efficiency into our system. A major advantage of electricity is that we can use a variety of resources to produce it, including renewable technology which will play an increasing role. Currently electric utilities in the US operate 112 nuclear energy plants, producing one-fifth

of our electrical supply, at a cost—which includes the cost of nuclear waste disposal—just slightly more than coal.

Had utilities chosen other available substitutes for the 112 nuclear energy plants, we would no doubt be randomly dispersing 20 percent more utility-generated greenhouse gases and other airborne pollutants into our ecosystem every day, not to mention the larger quantities of fuel we would be extracting from the earth, or the increased importation of oil.

In July 1990, a Gallup poll found that 74 percent of US adults thought we should use more nuclear energy if that will reduce the emission of greenhouse gases and air pollution.

There are many environmentalists who have worked with—rather than against—utilities to accomplish mutual goals. Southern California Edison Co.—which operates nuclear energy and solar plants, and aggressively promotes efficiency—is a good example. Many nuclear utilities have set up wildlife preserves around the plants—Tampa Electric in Florida has a manatee center, Diablo Canyon in California protects elephant seals and brown pelicans and 10 percent of all osprey hatched in Connecticut last year were from nesting platforms at the Millstone nuclear plant.

Perhaps it is time for those of us concerned about protecting our biodiverse environment and working toward a future that minimizes suffering and inequality, to step back from ideologically fixed positions and reexamine the issues from all sides. I'm convinced that a spirit of cooperation will get us all a lot further.

Mark David Richards
Washington, DC

GLOBAL REPORT CARD

I congratulate you on the comprehensiveness of your January/February 1991 issue and the series of articles, the 1991 *Global Report*, which conveyed the serious situation we face.

I believe we will not, however, solve these many problems until we are able to comprehend their interconnectedness. It was a little disappointing to see desertification, loss of biodiversity and global warming, for example, treated in three separate and almost unrelated articles. Desertification is an unfortunate label applied to an advanced loss of biodiversity in arid areas.

The greatest single reason for the major loss of biodiversity we are witnessing is that our agricultural practices are faulty and have been for over 10,000 years. At present people are faced with two broad approaches—conventional (mechanical/chemical) agriculture and LISA (low input sustainable agriculture) also called organic and various other names.

If we look at conventional agriculture

and bear in mind that soil erosion (apart from high mountain tops and river meandering) is a symptom of biodiversity loss, we find a grim picture. Despite America having the highest concentration of scientists and wealth we have ever known, our greatest export now is eroding soil.

If we look to organic or sustainable agriculture for our salvation we are still in trouble. As it is generally defined, it involves various cover crops, crop rotations, intercropping, etc., and independence from heavy machinery and chemicals. Well, many civilizations have already failed with that! They had no chemicals or modern machinery and relied entirely on crop rotations.

Until we start to see ourselves and our environment in more holistic terms we are not going to be able to reverse the loss of biodiversity and its appalling symptoms.

Allan Savory

Center for Holistic Resource Management
Albuquerque, NM

MORE GARRETT HARDIN

I'm no population expert, but I disagree with Garrett Hardin's summary of the population problem. (1991 *Global Report: POPULATION*, January/February 1991.) While I agree it does exist and is the single-biggest threat to the planet, I think he does more to perpetuate myths than present facts. The problem goes beyond persuading "women to control their fertility." In many countries it is the men who control how many children are born (if not survive). Using Ethiopia as an example of a population that has "grown beyond the mere 'survival carrying capacity' of the land" misses the point. Ethiopians are starving more from war than from over-exploitation of the land. And as a woman, I also don't like the insinuation behind the rhetorical question, "Who is directly responsible for a pregnancy?"

Hardin also talks about the cultural carrying capacity where humans need houses (I agree), clothing (I agree), furniture (well, I'd put shelter first), automobiles (I disagree), television sets (I also disagree). His list "goes on and on," to what I'm not sure—Sony Walkmans, cellular telephones, microwave ovens? Those items are not needs but wants. And it is the wants of the developed nations such as the US that more directly cause the problems of the third world (such as hunger, deforestation and pollution) than any inability by those peoples to control their numbers.

I do agree with Hardin's statement that "every nation . . . must take care of those children on the home territory." If the US did that, the whole world would benefit. I think the readers of *BUZZWORM* are well aware that Americans consume a disproportionate amount of the world's

resources and emit an equally disproportionate share of the world's pollution. It is possible that this planet can support 6 billion humans. It cannot, however, support 6 billion Americans. And it seems to be becoming apparent that it cannot support even 250 million of us.

Marny Ashburne
Somerville, MA

REJECTING RODALE

The flowing eulogy of Robert Rodale by Linda and Bill Bonvie (NOTES, NEWS & REVIEWS: *Goodbye To a New Visionary*, January/February 1991) is disturbing. Robert Rodale was a tireless advocate of false, often bizarre and frequently irrational ideas about health and nutrition. His publications *Prevention* and *Organic Gardening* have between them probably done more than any other single source to misinform and deceive the public about health and nutrition. Unfortunately, many of the victims of his ideas have been people who have had strong environmental concerns.

The untimely death of a visionary? No, the passing of a crackpot whose notions were deeply rooted in 19th century ignorance. This biased review certainly will send a shudder through your readers who happen to work in the field of health-fraud prevention.

James Steele

National Council Against Health Fraud
Resource Center
Kansas City, MO

EQUAL JUSTICE

I have just read, for the fifth or sixth time, *On the Road to Extinction*, (NOTES FROM THE FIELD) by Larry J. Barnes, in the November/December 1990 *BUZZWORM*.

This article both appalls me and outrages me. Perhaps it is my ignorance or my rage blinding me, but I have some unanswered questions: Why did Nepal join CITES? What is being done to enforce Nepal's National Parks and Wildlife Conservation Act of 1973? And how on God's green earth can a reporter report these criminal acts, yet they continue?

I completely understand the economical reasons the people, the vendors, of Nepal and Kathmandu use to justify their actions. I do not in the slightest condone their actions, but I do understand them. I am in prison for purchasing and possessing illegal narcotics. Why don't we start focusing on the purchasers and possessors instead of the merchants?

This problem of humankind toying with God's ecological balancing system needs to be addressed with the utmost sincerity and effort. If man continues to tighten the noose that is already around our necks, our grandchildren and great-

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*Eddie Palazzo
Johnstown, NY*

RECYCLED RECYCLED

In my five years of residence in the Pacific Northwest, I am appalled at the excessively rapid clearcutting of forests I have seen in Washington state. Entire hillsides have been so razed I hardly recognize them from one year to the next. I began eyeing anything made of wood and paper suspiciously, and, wracked with guilt, did what I could to "reduce and recycle."

I wrote to the editors of the environmental magazines I received and asked them why they weren't using recycled paper, and told them I was more than willing to sacrifice "quality" in order to assuage my guilt. I was told by the editors of these "quality" publications that their advertisers probably wouldn't want an inferior quality paper, so they didn't plan on switching. Because I knew some of these organizations used my annual dues for various good causes, I didn't drop them, but I felt worse than ever.

I always liked your magazine, but hesitated to subscribe, because you were another one of "those" environmental magazines that just couldn't seem to find any "quality" recycled paper. Besides, I was trying to reduce the amount of paper coming into my home. You did find some good paper, as I found out in the editorial in the January/February 1991 issue, and the Pentair Recycle Gloss is fantastic! My compliments to Niagara of Wisconsin Paper Corporation. I can now enjoy your excellent magazine with a relatively clear conscience.

*Janet Sailer
Seattle, WA*

We recently purchased a copy of your magazine. We hadn't heard of it before, but are very glad we found it! We have read it from cover to cover and are extremely impressed with the high quality of articles and the photography.

We wanted to compliment you on finding high gloss recycled paper. As a comment from us as two readers, we find the slightly less-white paper easier to deal with. Somehow the contrast is more comfortable to the eyes and more sympathetic than the stark white/black contrast. So, we feel this "slight downgrade" as you stated it in your editorial, is actually an improvement in our view.

We also like your viewpoint, as stated in the reply to a reader's letter [regarding BUZZWORM's advertising policy] (LETTERS, January/February 1991) of maintaining as independent and unbiased a viewpoint as possible. This is not an easy task in today's environmental movement, and we really appreciate the

effort. Only when *all* sides are allowed to speak and listened to can we come up with a complete picture of the situation at hand and a full understanding of the problem. And only complete understanding will eventually lead to the solution that is most pro-survival at that time.

*Steven and Monica Ferry
Anchorage, AK*

DAUGHTERLY LIAISONS REVISITED

The article *Dangerous Liaisons* on methyl bromide by the Bonvies in the March/April 1990 BUZZWORM indicated considerable concern for the hazards from large quantities of methyl bromide being discharged after fumigations of buildings and warehouses into the atmosphere, where nearby workers and residents might be exposed. Just after the article's publication, news reports (*Wall Street Journal*, May 16, 1990, and others) on an article in the National Cancer Institute's *Journal* indicated that NCI researchers had found eight-fold increase in lymph cancer in workers at flour mills, where methyl bromide fumigations have been the standard operating procedure for years. This finding suggests that increased incidences of this cancer might also be found in people living or working adjacent to frequently fumigated food warehouses, thereby being subjected to discharged fumigants frequently, exactly the concern of the Bonvies.

Now some data have been published by EPA on studies suggesting that downtown San Jose, California, may have abnormal contamination from such discharging of methyl bromide. In a report in 1987, the studies done by Singh, Ferek, Salas and Nitz at SRI International in Menlo Park, California, under an EPA Contract, measured atmospheric concentrations of airborne chemicals during 1983 and 1984 and for three periods in San Jose during 1985. For methyl bromide the data show that the first study period at San Jose had a mean level almost twice the highest mean level encountered in five other cities. In the third study period, San Jose had mean methyl bromide levels over seven times higher than during the first period and from 13 to 130 times higher than the other cities.

These data on much higher than usual concentrations of methyl bromide being perhaps common in San Jose suggest that San Jose's atmosphere needs a lot of further studies to find the source(s) to get them controlled.

*James A. Singmaster, III, Ph.D.
San Juan, Puerto Rico*

KILLER PHOTOS

Your photos are talking to me!

I was mellowing out with the folks on pages 84 and 85, soaking in the hot

spring and enjoying the view of the steep canyon walls (*Rio Grande, Rio Beautiful*, January/February 1991) and as often happens in the wilderness I disregarded the hazards of being hit by lightning, drowning, getting bit by a snake or buried in an avalanche, all the potential for disaster that makes a trip into the wilderness such a challenging and fun experience. And that's when the photo on page 85 spoke to me.

My initial reaction was, Wow! Nice photo, when I saw Tom Bean's overhead shot of The Rock Slide in Santa Elena Canyon. The smallest boulders in that photo are easily twice the size of the group's largest rafts, and the bigger boulders are the size of apartment buildings. Drawn in by the photo's crumbling cascade effect, the river purling through a perplexity of gray-green pools, and the tiny rafters climbing around, belaying their gear over the labyrinth of rock, I began to see that stretch of river as it truly is. The photo said to me, "This is not a still life! The rafts, the people and the water are moving, and the boulders are moving too." The photo whispered, "Come on, look a little deeper, peer in and see what is really happening here." And that's when I noticed the canoe. The remains of a mangled tin canoe just below the center of the photo whispered, "In the past someone's white water adventure went off in a direction that was out of control."

While trekking and paddling in the wilderness, people are occasionally caught in deadly snowstorms, sometimes fall off cliffs or wander until dead in hypothermic delusions. I conclude that we are still very much and always will be living in the millenia, the stone age, the land that time forgot. I for one am happy that beneath the surface of every pretty river there slithers a serpent, in every canyon wall there is a huge boulder waiting to come crashing down. As they say back in civilization, every cloud has a silver lining. But in the back country every cloud holds a foot of snow, an inch of rain, bolts of lightning and hail the size of pine cones.

Gerard Fleck
Boulder, CO

SHADES OF GREEN

Just a note to say "keep up the great work." Your magazine has provided me and my family with much greater insights into the environmental issues facing the world today. You've also provided many alternatives to everyday habits and products. I especially appreciate your attention to detail by approaching the many different sides of an issue. By doing so, you allow readers to make an informed decision regarding their personal stance on an issue. Rarely are there black and white perspectives to environ-

mental issues. You might say there is a lot of gray when you're talking green.

By the way, a note of correction. In the January/February 1991 issue (PAST STORY UPDATES, *Humpback Whales*), the Governor of Hawaii is John Waihee (why-hay-ay), not Walker.

Patterson Hutchison
Tallahassee, FL

MORE WISE USE

In your article, *The Wise Use Guys*, in the November/December 1990 issue of *BUZZWORM*, Grant Gerber, founder of the Wilderness Impact Research Foundation, refers to "the damage wilderness causes society (and) the economy;" and Ed Wright, editor of the *BlueRibbon Newsletter*, says, "The wilderness has no economic value." Obviously these despots have never read an ecology textbook, in particular one section on power density ratios, where a little number-crunching would indicate that every square mile of city needs about 50 square miles of wilderness to purify its air, recycle its water, absorb its wastes, modify its climate and provide a substantial portion of its food and fiber needs without economic cost or human management. However, we do owe these "unwise use guys" a certain perverse debt of gratitude. They remind the ecologically enlightened that they cannot persuade others by citing the joy of natural beauty, or the solace such areas can bring to depleted souls, as reasons for preserving wilderness. Such reasons are actually subjective in that they mean nothing to those who don't care about such things; and that the ecologically enlightened, in their quest to bring others out of the darkness, must cite reasons that are relevant to anyone who eats, drinks and breathes.

Robert Joslyn
Mahopac, NY

GREEN COSMETICS?

I applaud Mary Kay Cosmetics for their recent recycling action. (*GREEN BUSINESS*, January/February 1991). It is a step in the right direction for all. And I congratulate them for being recognized with the Environmental Excellence Award from Clean Dallas, Inc. However, is it not true that Mary Kay Cosmetics is notorious for their animal (rabbit) testing; for spraying products into the eyes of cute, furry, defenseless animals to test the product's irritability?

Katharine A. High
Camphill, PA

LETTERS TO THE EDITOR should be addressed to Editor, *BUZZWORM Magazine*, 2305 Canyon Blvd., Ste. 206, Boulder, CO 80302. Letters must include writer's full name and address. Letters may be edited for purposes of clarity or space.

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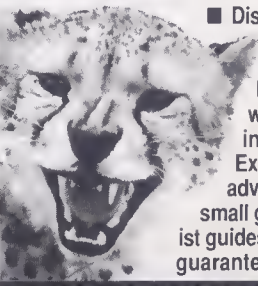
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CIRCLE NO. 6 ON READER SERVICE COUPON PAGE 93

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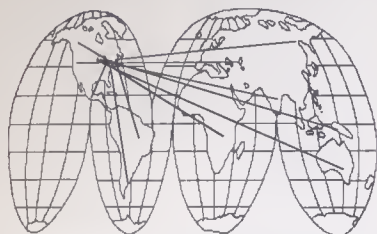


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CIRCLE NO. 20 ON READER SERVICE COUPON PAGE 93

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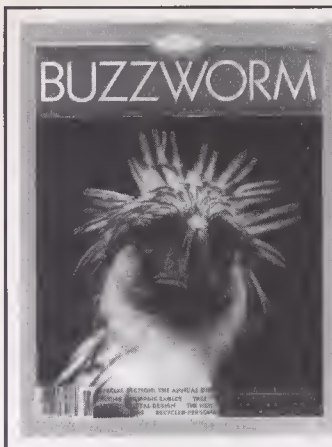
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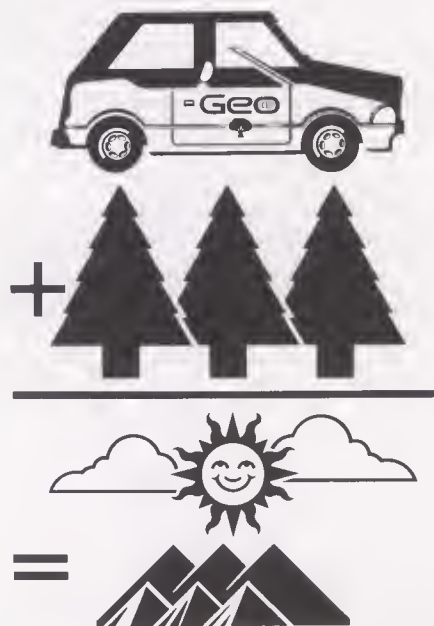


REQUIRED READING!

To help round out a good environmental curriculum BUZZWORM offers teachers special rates for classroom use. For all the particulars contact:

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Notes, News & Reviews

SILVER SAVIORS



Repopulate the earth with animals and look good too! Sundancer Jewelry of New Mexico has blended fashion with purpose in a line of three-dimensional cast sterling silver endangered species necklaces, bracelets and earrings. Seven endangered mammals are included: the golden lion tamarin monkey, the giant panda, the black rhinoceros, the Bengal tiger, the mountain gorilla, the Asian elephant and the humpback whale. A percentage of profits from sales of the endangered species-styled jewelry, estimated to be up to \$20,000 in 1991, are donated to the Species Survival Plan of the American Association of Zoological Parks and Aquariums.

The Species Survival Plan currently breeds 56 endangered or threatened species in zoos around the United States. The program strives to maintain 90 percent of the genetic diversity found in the wild, and aims to reintroduce animals to

the wild whenever possible. Some species which have been in the program for a number of years, such as the Andean condor, Arabian oryx, Bali myna, golden lion tamarin, Guam rail, Puerto Rican crested toad, red wolf and thick billed parrot, have been reintroduced into the wild. The golden lion tamarin program has been so successful that second generation monkeys are being born outside captivity. The association currently receives profit donations from some six small businesses like Sundancer Jewelry.

The jewelry is sold with educational tags which inform the buyers about the status of each species. For more information contact Sundancer Jewelry Co., 5921A Office Blvd. NE, Albuquerque, NM 87109, (505) 345-4144.

SAVE 'EM FOR THE GARDEN!

Disposable or cloth diapers? This time, it's not the same old questions with the same old arguments. Babyland Diaper Service, a 42-year-old California cloth diaper service, is now delivering and picking up Weyerhaeuser Company's "Loving Touch" disposable diapers along with its own cloth diapers. Babyland washes the disposables. The organic pulp is separated from the inorganic plastic and delivered to the recycling industry where it is used to make paper and cardboard. The inorganic materials are bailed and donated to plastic manufacturers who use reclaimed plastic to make microfiche, ballpoint pens, greenhouse trays and cassette tapes. For more information contact Babyland Diaper Service, 3348 Main St., San Diego, CA 92113, (619) 239-2371.

GREEN SHUTTER

Processing film is a toxic business. Conventional photo processing may discharge as much as 20 to 25 gallons of effluent for every roll of film processed. These effluents are largely water, but they also contain the chemicals used in developers, fixers and stabilizers. After silver recovery, the water goes to a municipal secondary treatment system. Although most minilabs are plumbingless, which reduces the total volume of waste discharge by as much as 98 percent, home processors are still a source of pollution. In response to a need for more information by home developers, a new nonprofit membership organization called PhotoGreen was started.

According to Bob Stovall, PhotoGreen's national director, the main goal of the group is to act as an information clearinghouse. PhotoGreen will emphasize cooperation between manufacturers of photographic equipment and supplies, labs, retailers and all users of photography, professional and amateur. Information on conservation problems and solutions related to the photographic industry will be gathered from members and outside sources and distributed through the group's newsletter, which was due out in April. PhotoGreen also hopes to "utilize the tools, talents and power of the photographic industry to further the cause of conservation of the earth's resources." The group plans to make photographic services available free of charge to recognized conservation-oriented nonprofit organizations to help them illustrate their publications. For more information contact PhotoGreen, RD 2, Box 638A, Hampton, NJ 08827, (908) 537-4313.

OIL SPILL

Oil spill cleanup: It's become a common misnomer since the 1989 Exxon Valdez mishap, and the recent Persian Gulf catastrophe.

That's why a private not-for-profit group—the Marine Spill Response Corporation (MSRC)—is launching what will be "the largest, best equipped, best trained oil spill response and cleanup organization in the world," says Steve Duca, who oversees Readiness and External Affairs for MSRC.

Through the Oil Pollution Act of 1990, Congress designated MSRC as the official response group for national catastrophic spills. The idea came about in direct response to the 260,000-barrel Valdez spill, which had its second anniversary on March 24. A task force of oil company executives concluded that neither government nor industry had the equipment and response personnel ready to deal with catastrophic tanker spills, so MSRC was recommended to fill the "national void."

This \$825 million venture—funded by the oil industry—will be managed by two retired Coast Guard officers. Five regional response centers are being established around the country in accordance with oil traffic patterns. Each one will have the capability to contain and clean up a spill of 260,000 barrels.

South Florida will serve as a major staging area for the southeastern region of the country, and the other four centers will be established in the lower 48 states. The entire system is expected to be operational by February 1993.

MSRC will allocate \$35 million for research and development over a five-year period—more money than the EPA and Coast Guard together have set aside for spill response research. For more information contact MSRC, 1350 Eye St. NW, Ste. 300, Washington, DC 20005, (202) 408-5700.—Patricia A. Parker

GEOGRAPHY REVISITED

If you think geography is boring, think again. Did you know?

Arranging the world's population in a crowd with about one square yard of space per person would fit Long Island, New York.

It is hard to start a fire in La Paz, Bolivia, the world's highest city, because there is little oxygen there.

Costa Rica abolished its army in 1949.

Antarctica's largest land animal is a wingless insect less than one-tenth of an inch long.

Only 37 out of every 100 Europeans are under 20 years of age. More than 50 percent of all Africans are less than 20.

No official census has been taken in Lebanon since 1932.

14 peaks of the Himalaya Range are over 25,000 feet.

Earthquakes have been taken in Lebanon since 1932. One out of every five Australians is foreign-born.

These facts are from *Where on Earth, A Refreshing View of Geography*, by Donna V. Grillet. This new geography book contains information about agriculture, animals, cities, climate, continents, countries, the planet, islands, landmarks, mountains, natural resources, people, water, earthquakes and an assortment of odd facts. The book updates the presentation of geography so that even the least interested readers will find a desire to tell others what they find. *Where on Earth* offers quizzes and answers, facts and figures and maps. Geography needed to be a refresher course almost as much as you'll find you need one. For more information contact Prentice Hall Press, 15 Columbus Circle, New York, NY 10023.

DANGLING WILDLIFE

Looking for a way to bring wildlife home without breaking any laws, and without having to clean up after the animals? Try a mobile from Geosystems made from recycled cardboard. The African Animal Mobile uses photographs of live animals taken on various safaris in Kenya, Uganda and Tanzania. The animals featured include: an impala, zebra, cape buffalo, lion, giraffe and wildebeest. Two endangered species, the cheetah and the black rhino, are also displayed along with the now threatened African elephant. An educational booklet accompanies each mobile and generally contains information on natural history, conservation, teaching activities, questions and answers, references, related club and organization contacts and glossary. Other Geosystems mobiles include a Novus solar system, a mini solar system, tropical parrots, tropical fish and dinosaurs, all on recycled cardboard.

Another way to capture wildlife without having to feed them is offered by Skyflight Mobiles. The mobiles are silk screened three-dimensional songbirds, coastal birds, wilderness birds, swans, hummingbirds, tropical birds, cranes, penguins, savannah mammals, tropical fish, marine mammals and dinosaurs. Skyflight donates 5 percent of its profits to environmental groups such as Sierra Club, National Audubon Society, Cousteau Society, Greenpeace, the Nature Conservancy, Wilderness Society and World Wildlife Fund. Skyflight also donates mobiles to environmental groups for fundraising. Since the products are aimed at people who appreciate the environment, Skyflight felt it was important to

target the profits toward groups that help save things like wetlands and endangered species. Each mobile comes with educational details about the animals or birds in the mobiles, such as habitat needs, population status, environmental impacts and what you can do to help.

For more information contact Geosystems, 1141 Vallejo St., San Francisco, CA 94109-2118, (415) 885-6813; or Skyflight Mobiles, P.O. Box 3393, Bellevue, WA 98009, (800) 766-8005.



RELIEF FOR THE HARRIED TURTLE

If you were a sea turtle looking for a little R&N (resting and nesting) in the Palm Beach Shore area, you would most likely check into and crawl onto the soft sands of the Embassy Suites Hotel. The human accommodations are modern—it opened in January—and roomy—257 suites, to be exact. But especially for turtles, this hotel spent over \$200,000 to treat all its windows with a special tint designed to significantly cut down on sun glare reflecting from the windows onto the beach. This way, Embassy Suites insists, sea turtle hatchlings won't get disoriented by the glare and wander into traffic as they did on Delray Beach, Florida. Also, all of the hotel's landscaping lights have been camouflaged or installed below ground level so skyward-directed light won't confuse or disturb the turtles.

But that's not all this turtle-minded hotel franchiser has done. To further protect the turtles, it has constructed an eight-foot-wide boardwalk to allow guests to access the beach without disturbing those turtles nesting in the dunes.

One might say Embassy Suites has coaxed the turtles out of their shells by sticking out its own neck—and its wallet—a bit farther than the rest.

For more information contact Embassy Suites Hotel, 181 Ocean Ave., Palm Beach Shores, FL 33414, (407) 863-4000.



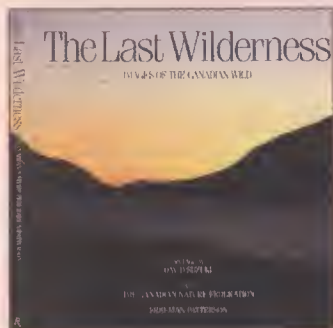
Photo: National Park Service

RIP (Recycling in Parks)

Vacation season is upon us, and the nation's parks will receive over 257 million visitors—and their vacation trash. With national parks facing the same landfill crunches as the rest of the country, the National Park Service has decided to offer visitors the opportunity to do something new at the parks they visit: recycle. Beginning last summer, recycling bins for plastic, glass and aluminum were set up at the picnic and scenic areas, campgrounds and roadsides in the Grand Canyon in Arizona, the Great Smoky Mountains in Tennessee and Acadia in Maine. Yosemite in California has one dropoff center with plans to expand this year, as soon as bear-proof recycling bins are designed and approved. In the first year of the program, more than 100,000 pounds of recyclables (50 tons) were collected from five million visitors. Other parks are expected to join the \$250,000-per-park program which is sponsored by Dow Plastics and Huntsman Chemical Corp. For more information contact the National Park Service, Office of Public Affairs, US Department of the Interior, P.O. Box 37127, Washington, DC 20013-7127, (202) 208-6843.

THE LAST WILDERNESS

Picture books, picture books, there are so many beautiful pictures out there. Published this year is *the* picture book of picture books, *The Last Wilderness, Images of the Canadian Wild*, with an introduction by David Suzuki, the CBC host of "The Nature of Things," and text by the Canadian Nature Federation and Freeman Patterson. *The Last Wilderness* is a remarkable portrait of wild places. Freeman Patterson has selected 140 original images from over 9,000 photographs taken by nearly 50 nature photographers. Together, they present an astounding vision of wilderness that reminds us of the earth's fragility and strength. Royalties from the book will go to the Canadian Nature Federation, which promotes the understanding, awareness, enjoyment and conservation of our natural environment. Published by Rizzoli International, 300 Park Ave. S., New York, NY 10010, (800) 462-2387, (212) 387-3400.



PEACOCK'S WACKY WORLD

As the growing season springs up you may be thinking about how to control the insects in your yard, orchard or garden. You can almost smell the pesticides you used last year still lingering, and you're hoping to avoid that gnawing feeling of wrongdoing you got from using them. This year, and for the next 25 or 30 years, why not have a peacock feeding in the back garden.

Dennis Fett and Debra Buck, the Iowa Peacock Farmers, and authors of *The Wacky World of Peafowl*, raise and sell peafowl—peafowl refers to males (peacocks), females (peahens) and chicks (peachicks) collectively. These natural but noisy 25-pound pest controllers eat grasshoppers, crickets and many other insects, and they can survive most winters. But they won't show their tail feathers in the cold. They can fly about as far as the nearest tree, so you won't have to worry about them getting too far away. They make fine pets and can be trained to get along with just about anything, including cats and dogs and goats. They also like cat food.

If you're looking for a "watchdog," peafowl may be the answer for you. Peacocks make loud sounds, with one particular call which sounds like "help!" Both male and female peafowl make distress calls—loosely "who eee" and "woo woo woo woo" sounds. If you already have a watchdog, Fett is able to surgically "de-voice" your fowl if necessary. They also sell books, sweatshirts, feathers and an unending tape loop of peacock noises, which while being possibly unpleasant, may scare burglars, if not the bugs, away. Fett and Buck even wrote a country western song about their peacocks. The Iowa couple markets four of the world's eight peafowl species: India blue, white, black shoulder and cameo dun. Peafowl eggs sell for \$4 to \$50 each, chicks for \$20 to \$300.

For more information contact Iowa Peacock Farmers, R.R. 1-BZ, Minden, IA 51553, (712) 483-2473.

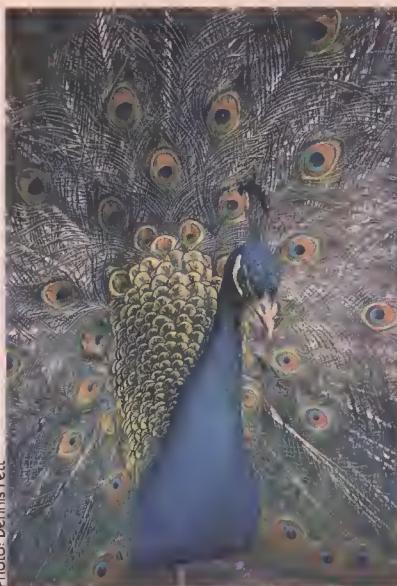


Photo: Dennis Fett

GREEN MARKETING

Environmentally responsible companies may now receive an advertising expert's evaluation of their marketing strategy for the cost of a phone call. Johans+Son Advertising was created in 1989 exclusively to represent earth-sensitive clients, and provides full-service advertising. In January, Johans+Son announced it will accept calls from companies across the country seeking advice about how and when to promote themselves, and whether their own efforts so far have been on track. The firm will assess a company's claims and suggest ways to reach a targeted market. What does the ad company get in return? "Environmentally and socially responsible companies' successes will ultimately lead to a better environment and society," says Robert Johans. Johans also hopes, of course, that as earth-sensitive companies become successful and want to create advertisements, they will contact his company. For more information contact Johans+Son Advertising, 8800 Venice Blvd., Los Angeles, CA 90034, (213) 559-1041.

COMPARATIVE CONSUMPTION

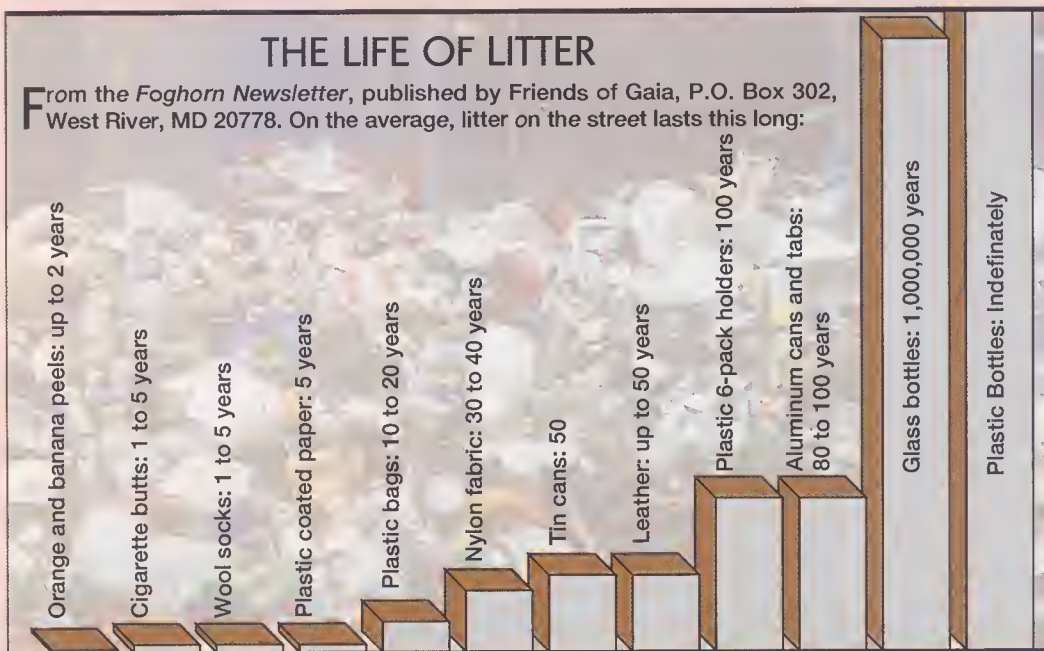
From *Discarding the Throwaway Society*, by John Young, published by the *Worldwatch Institute*, 1776 Massachusetts Ave. NW, Washington DC 20036, (202) 452-1999.

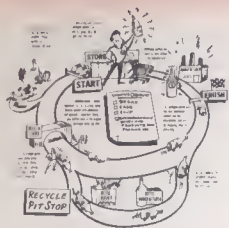
The average Japanese consumes nine times as much steel as the average Chinese, and Americans use more than four times as much steel and 23 times as much aluminum as their neighbors in Mexico. US paper consumption per person is over a dozen times the average for Latin America, and per capita nickel use is about 25 times higher than the average in India.

Although materials consumption in industrial nations has largely leveled off, it is still quite high in comparison with historical levels. Over the last century, US per capita consumption of steel has grown fourfold, copper fivefold, paper sevenfold and concrete sixteenfold. According to one estimate, the United States alone consumed more minerals from 1940 to 1976 than did all of humanity up to 1940.

THE LIFE OF LITTER

From the *Foghorn Newsletter*, published by Friends of Gaia, P.O. Box 302, West River, MD 20778. On the average, litter on the street lasts this long:





THE GREAT RACE

100 BOTTLES OF BEER ON THE WALL

Are you feeling guilty about tossing your used beer bottles? Are you skeptical that those old bottles may not actually be reused after you have taken them to the recycling center? Rainier and its sister company Blitz-Weinhard are taking yet another step in the recycling revolution: They are now refilling their full line of single-serving bottles. Refilling used bottles was a common practice in the late 1800s, yet today, Rainier and Blitz-Weinhard believe they are the only Pacific-Northwest companies and the only major brewers in the country to refill their entire line of single-serving bottles.

In 1971, Rainier changed its production process to include all-aluminum cans in an effort to conserve natural resources. Now, with the growing concern over the environment, Rainier and Blitz-Weinhard feel they need to do more. Mark Van Heuvel, director of operations at Blitz-Weinhard, confirms that more than 100,000 cases of the 12-oz. longneck bottles have been recovered. Both companies are offering a 50-cent per-case redemption on returned bottles. The bottles are also packaged in completely new, recyclable cartons, which now makes it possible to repackage bottles in the returnable, reusable, recyclable boxes. It is estimated that with the new packaging and complete recovery of bottles, both Rainier and Blitz-Weinhard will save nearly 2 million cubic feet of landfill space each year. "This is all being made possible by \$300,000 in renovations to our bottle inspection and in casing machines," says Van Heuvel. "This is a worthwhile investment we think will help stop the degradation of our planet." For more information contact G. Heileman Brewing Co., Inc., 1133 W. Burnside St., Portland, OR 97209, (503) 222-4351, (800)-6BOTTLE.

—Kevin M. Teel

Photo: Mike Ward

TAKE A WALK ON THE WILD SIDE

There's Superman, Spiderman, Batman and Rhino Man fighting the evil doers and saving us from harm and destruction. Rhino Man? He's the newest of the superheroes—but he's real. His mission is to save the black rhino from extinction by walking, not flying, into our hearts.

Michael Werikhe began his one-man crusade in 1982. On his first 300-mile walk, from Mombasa to Nairobi, Werikhe set out to talk to people about the serious plight of the black rhino and, hopefully, raise funds at a grassroots level for its conservation. Enthused by the success of his first walk, this mild-mannered factory worker who grew up caring for the creatures of the wild during his childhood in Kenya, set off again in 1985, this time walking 1,300 miles through Uganda, Tanzania and Kenya. The money raised by Werikhe's first two African walks was used to help fund rhino studies and to help support Kenya's rhino sanctuary.

In the summer of 1988, "Rhino Man" took his crusade off the African road and hoofed it through Western Europe, covering 1,800 miles. This time, Werikhe reached more than 50 million people through radio, television, newspapers, magazines and special appearances. One million dollars was raised for African rhino projects and for projects to help curb the international trade in rhino horn.

For his efforts, Werikhe was named by the United Nations' Environmental Program in the 1989 Global 500 honor role. In 1990, he was awarded the Goldman Environmental Prize for outstanding environmental achievement in Africa.

This year, the American Association of Zoological Parks and Aquariums and the Discovery Channel have coordinated a 1,500- to 2,000-mile walk for Werikhe within the US and Canada, which will include stops at approximately 30 zoos and aquariums. The goal of Werikhe's North American walk is to heighten awareness of conservation and raise \$3 million in contributions and pledges. Some 75 percent of the money raised will go to rhino conservation causes in Africa; the remainder will be shared by North American rhino species survival plan programs. The walk is now in progress and will end in September in Washington, DC.

For more information contact American Association of Zoological Parks and Aquariums, AAZPA Conservation Center, 7970-D Old Georgetown Rd., Bethesda, MD 20814, (301) 907-7777.



Photo: Karen Asis

WATER USAGE

- Number of gallons flushed in the US every day: 4,800 million
- Number of gallons that would be saved if toilets were replaced with ultra-low flush models: 1,536 million
- Gallons of mouthwash gargled in the US daily: 69,000
- Square miles of toilet paper used every year in the US: 22,627
- Percentage of water usage in summer that goes to outdoor needs such as watering lawns: 50
- Metric tons of sewage sludge generated in the US per year: 7.7 million
- Percentage of wastewater in the home that comes from toilets: 33; clothes washing: 26
- Percentage of water drawn from the Ogallala Aquifer that is used to produce beef: 75
- Estimated cost of subsidizing the meat industry in California with water per year as of 1990: \$24 billion
- 1991 budget for child welfare services in California: \$475 million

Source: Palm Springs, California; National Center for 233 Edgewater Ln., West Columbia, SC 29169 and Earth Day 1990 fact sheet; U.S. Bureau of Water Use

FRIENDS

Imagine being friends with a blue whale. How wonderful it would be to learn about and share adventures with such a companion. And how sad it would be if it all came to an end because the whale disappeared."

My Friend Whale entertains young readers with bright illustrations and facts about whales while disclosing that the creatures can and do disappear. The back of the book also contains information for kids. For more information contact Bantam Books, 666 Fifth Ave., New York, NY 10103, (212) 492-9645.

MY FRIEND WHALE



Simon James

SURVIVAL OF THE CUTEST

It's either the most diabolical pet-fancier conspiracy or a visionary plan to snatch species from the jaws of extinction. Biosurvival Trust, originally Zoovival, Inc., conceived in 1988 by the non-profit group's president Gregory Cunningham, takes a bold tug at a knotty problem: species preservation on a shrinking planet.

Biosurvival emphasizes research, educational resources and on-site breeding colonies for threatened species. "Domestic breeding" is the most direct action trust members can take; Biosurvival's 2,500 members contribute personally, for their own enjoyment or profit, to species survival. There are now 36 "species teams" harboring exotic plants or animals on their private land. Some 100 more projects are identified.

Participation in a "species team" requires, in addition to the \$24 annual membership fee, a special species membership fee for required training, plus \$100 to \$100,000 to purchase breeders and provide an appropriate environment. But the potential "return on investment" is a whopping 200 percent to 1000 percent a year. A rare chameleon can bring \$200, a snow leopard \$10,000 on the domestic pet market.

Biosurvival sees its role as preventative, stemming the tide of extinctions before they're imminent. It works exclusively with "Appendix II" species of CITES (Convention on International Trade in Endangered Species), which are not officially "endangered" or subject to trade bans. The most immediate effect is to slow the ravages of the exotic pet and plant trade, legal and illegal, on wild populations. Most domestic-bred progeny will be available for public sale: a hyacinth macaw raised by a Biosurvival member means one less hyacinth macaw absconded from the Amazon. Ultimately, Biosurvival hopes to provide a future species reservoir for governments that "rebuild" appropriate habitats for species reintroduction.

The methods of Biosurvival Trust may balance on the slippery line between philanthropy and opportunism, but only time will tell. For more information contact Biosurvival, P.O. Box 698, Safety Harbor, FL 34695-0698, (813) 726-3385.

—Philip Johnson

PAST STORY UPDATES

BUZZWORM updates articles that have appeared in previous issues to assist our readers in keeping current.

Humpback Whales—Double Jeopardy (Summer 1989, page 21) In January, Paul von Hartmann, the head of Sea Shepherd Society's Hawaii office, was fined \$6,000 by a Federal Magistrate for approaching within 300 yards of a humpback whale and her calf, a violation of federal regulations, in Maalaea Bay. A National Marine Fisheries agent testified von Hartmann came within 65 yards of the whales. After noting von Hartmann's commitment to the protection of marine mammals for several years, the Magistrate concluded that "in a momentary lapse, he became a harasser of this whale and her calf, by operating a noisy motor in their vicinity and by following them, which he was not permitted to do." Von Hartmann maintains his innocence and is appealing the case. Between the months of his citation and his sentencing, von Hartmann took 19 sequential photographs of Pacific Whale Foundation's Lahaina-based whale-watching boat, *Lady Anne*, approaching too close to a pod of whales. State Senator Rick Reed later publicly charged the Pacific Whale Foundation with violations of the Marine Mammal Protection Act in a 14-page report to the state senate. No action has yet been taken.

Energy—Nuclear Genies, Economic Realities (Mar/Apr 1991, page 48) Nearly ignoring alternative energy sources and energy efficiency planning, the Bush Administration's proposed energy policy, released in February, emphasizes domestic oil exploration and drilling, keeping the US dependent on petroleum oil.

Public Service Company of Colorado announced in February that it has begun constructing a temporary storage facility at the Fort St. Vrain Nuclear Generating Station, which may be used to store the plant's spent nuclear fuel until shipping to a Department of Energy facility can begin. The company plans to decommission and repower the plant with natural gas, but this process can begin only after all the spent fuel elements have been removed from the reactor building. Decommissioning and repowering should be completed by April 1995. The company has also

begun a study to research the resource and economic feasibility of using solar-powered systems for a portion of the proposed conversion.

Soviet Union—Green Cries From Red Square (Mar/Apr 1990, page 28) The Soviet Association for Ecology and Peace held a conference in Moscow in February and revealed three main ecological disasters which occurred in the last two or three decades in the Aral basin, the Lower Volga and Caspian region and the Neva Bay and Finnish Gulf in the USSR.

Although national and international interest in Soviet environmental concerns is being shadowed by political events, two water management projects, the Volga-Don-2 and Volga-Chograi, have been stopped because of pressures by Soviet environmentalists. The Association for Ecology and Peace has also begun to expose the state, EPA-like, Goskompriroda for being "nature abusers." "Although organized with the purpose to overcome an administrative system in the field of nature protection, they have now become the chains of the same system," the group of scientists charged in February.

Pandas—Giant Panda Controversy (Winter 1989, page 16) Pan Wenshi, a biologist at Beijing University, has asked for such directives as firm policing of poachers and clear directives from the central Chinese government to farmers and foresters in a report he submitted to the Forest Ministry in January. Tradition and bureaucracy have prevented the removal of thousands of people from designated panda reserves. To allow for this population and still save the panda from extinction, Wenshi said he believes up to 60 percent of the forest cover in panda habitats can be cut down without serious environmental ill-effects. Farming is possible if limited to the lower slopes of mountains and if forested corridors between mountains are preserved, he believes.

As for captive pandas, Wenshi believes many zoos give pandas too much food and too little exercise, making them too fat and too weak to mate. Only 37 pandas have been born in captivity in five decades and 14 of them died within six months. The \$1 million breeding center at Wolong has produced only one panda.



Photo: Jessie Cohen

Once, years ago, knowing better but doing it anyway, I spent an afternoon trying to save a dying tree in the Arizona desert. What has reminded me of my endeavor is a recent survey by *Time* magazine which found that a whopping 80 percent of Americans feel so confused about environmental issues that they don't know what to do. I may have been an environmental ignoramus, but I wasn't confused about what I wanted to do to lend a helping hand.

The tree was a paloverde; it was dying from mistletoe. We'd been camped by it for several days. Obligated, like the coyotes, lizards and jackrabbits we glimpsed, to seek shade during the day, I had chosen this tree for its gnarled roots, flash-flood watermarks and amazing bark—and, too, because its scanty flowers meant fewer bees. A paloverde in full bloom is an ethereal swath of yellow and a Mecca for bees.

Whiling away hours in its shade, I grew fond of this old-timer. The patchy islands and knobby peninsulas of bark it had grown in its old age endeared it to me. Paloverdes aren't supposed to have bark; it's an extravagance their smooth, leaf-green skin can't afford. Bark on a paloverde is a badge of hard-earned longevity, a mark of venerability. It was the damn-the-cost bark this tree had grown that compelled me to do something about the dark, devouring cloud of mistletoe choking first its flowers and soon the life out of this magnificent tree. Forget about stolen kisses under Christmas sprigs. For trees infested with it, mistletoe is the kiss of death.

Wearing White Mule work gloves, I set about yanking out fistfuls of the leathery-leafed, parasitic enemy invader. When I'd cleared the pendent clumps festooning the lower branches I positioned our old CJ-7 Jeep so I could stand on it—bumper then hood—and snag some of the higher clumps with a rib from a dead saguaro. For a period of time nothing else mattered to me except how much mistletoe I could pull off that tree. Watching it pile up on the ground filled me with hand-rubbing glee. When I set fire to the pile, it burned with greasy ease, its foul smoke routing my downwind husband who, to his credit, did not ask me what good I thought I was doing. Not that I felt any confusion about it. I was saving a tree's life. Well, *extending* it anyway. At any rate, I definitely felt saintly.

But had my good-hearted deed done any good? Nah. It was sheer folly, my taking on Mother Nature like that. The out-of-reach mistletoe in "my" paloverde would soon spread its dominion, and mistletoe from nearby paloverdes would breeze over to speed up the process. This much I had gotten right though: Square one *is* caring. Of course there's caring and then there's *effective* caring; but having your heart in the right place paves

the way for getting your head on straight.

Trying to sort out the environmental issues tugging at your sleeve, wallet and heartstrings and getting them to have some sort of narrative coherence is like coming in late to a movie and having to figure out who's who, what's happening and why everybody's laughing. The environmentally bewildered want to know: "Where can I begin? How do I find a starting place?"

Finding one's own personal "it" is it. What matters is that something matters to each of us. In his poem "Requiem for Sonora" Richard Shelton gets to the crux of what this means when he says, "... oh my desert, yours is the only death I cannot bear." Ask yourself what you feel that way about. What place makes your spirit well up within you? What creature do you feel a resonance with? What natural wonder startles tears into your eyes?



TOO CONFUSED TO CARE?

By Melinda Worth Popham

For me, it's the Sonora desert of Arizona with its signature creature the coyote. Having always wanted to know some chunk of nature well and truly, it wasn't until I saw the Sonora desert that I felt inspired to take a crack at it. I know why, too. It wasn't the razzle-dazzle of its sunsets nor my stunned admiration for the survival skills of its inhabitants that inflamed me with resolve to learn the names and ways of everything I came across in it. It was that here was a piece of Nature so streamlined and finite, so elegantly economical, so pared down to bare minimums that even I, a kindergartner in the natural world, could grasp it. As Wendell Berry says, "Our wish to preserve the planet must somehow be reduced to the scale of our competence. Only love can do it."

Enamored with the clear-cut, bone-clean


beauty of the desert, my mind and senses were invigorated by a can-do spirit. On alpine or coastal turf I always had to fight off a pessimistic lethargy of will when it came to tackling the identities of the seemingly teeming hordes of winged, rooted and four-legged denizens. The one-at-a-time way each thing in the desert caught my eye—a solo ocotillo; one lone, lean coyote—energized me to learn about them, get to know them and, eventually, through my writing, put in a good word for them.

Small wonder, when you think of it, this nationwide mass confusion over environmental issues. Accustomed to having high-tech, computer-generated, satellite-bouncing gizmos provide us with instant results, quick fixes and best and worst case scenarios, we don't like being asked to take "maybe" for an answer, and we have lost all patience with the pensive, tortoise pace of gathering wisdom, informing our spirits. The aesthetic and recreational forays we make into Nature give us a backslapping relationship with it and serve to remind us that Nature isn't just real estate in the form of "raw" land or an ocean "vu." Our experience of Nature needs to simmer, stew and steep in us, gaining in strength and color, richness and depth over time before it begins to produce wisdom, concern and, above all, reverence for it at the highest and purest ethical level.

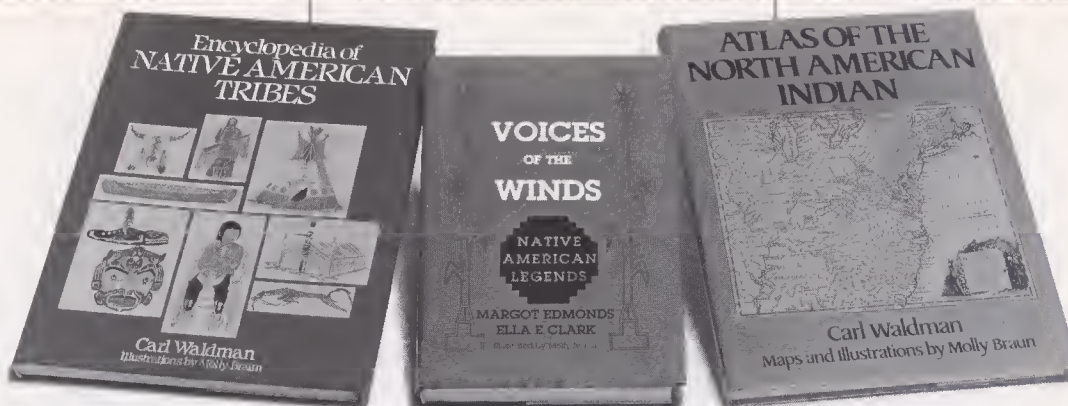
Once you have whooped "Eureka!" over your own personal "it," in your subsequent eagerness to know it inside out, to do right by it and to become intermingled-onto-blurred with it (à la John Muir's "We are now in the mountains, and they are now in us"), you may become discouraged by the slowness of this brewing process. If so, take heart:

I have an acquaintance who sought inner self-education by backpacking alone in the Sierra Nevadas. He trudged for days and with gathering dismay discovered that his thoughts were utterly mundane and trivial and that he could not mentally transcend the immediate discomforts from temperature swings and the fiery blister on his heel. After going several days without seeing another soul, he came upon a hiker who hadn't seen a human for three weeks. My acquaintance, already feeling like a philosophical flop and a lousy outdoorsman, was humbled to think of the inner stamina, blazing insights, soul-searched answers and lofty whatever this man must have found in himself in the course of those solitary weeks.

"My God!" he burst out. "What have you thought about all that time?"

Looking down at the ground, the man said fervently, "Milkshakes, chocolate milkshakes." 

Melinda Worth Popham is the author of *Skywater*, Edward Abbey Award winner of 1990.



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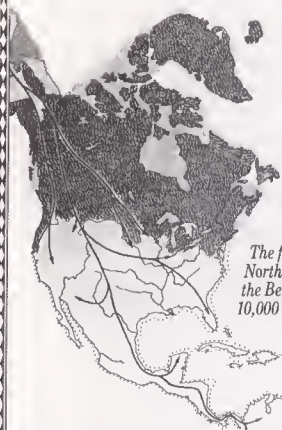
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The first inhabitants of North America migrated over the Bering Strait Land Bridge 10,000 to 15,000 years ago.

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Atlas of the North American Indian

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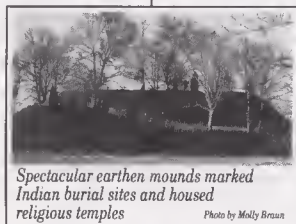
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Carl Waldman

At the height of their stewardship over North America, more than 150 Indian nations thrived from the frozen tundras of Alaska to the steamy



Spectacular earthen mounds marked Indian burial sites and housed religious temples

Photo by Molly Braun

URBAN JUNGLE

By Marty Westerman

Boulder, Colorado ships geese to Kansas; beaver dams cause flooding in Evansville; Indiana and sea lions lay claim to Pier 39 in San Francisco, California.

These are headlines from "The Urban Jungle," where hordes of humans are subdividing animal habitats for housing tracts and industrial parks. The big surprise is the animals are adapting to us. Moose regularly find winter eats in the shrubbery of northern towns from Maine to Alaska. Eastern black bears are being fed well by Pennsylvania city dwellers, and are reappearing in Ohio after a century's absence. Now that big predator cats are largely gone, deer populations are burgeoning in parks and preserves from Long Island to Cleveland to Seattle.

More often, we consider "urban animals" to be the smaller, cuter and more benign creatures that forage and hide in the

mails clearer than when we meet them face to face, says Guy Hodge, data and information services department director for the Humane Society of the United States, and co-author of the *Pocket Guide to the Humane Control of Wildlife in Cities & Towns*. "People take personal offense when an animal invades their territory. They don't want to give them food or share space unless that animal is tamed," he explains.

Oddly, it does not occur to most of us that we are the invaders and the animals are simply trying to work around us.

Hodge cites a vixen recently discovered raising a litter of pups in Arlington National Cemetery, and pumas roaming northern Virginia. Throughout the country, at industrial parks landscaped with human-made lakes and reflecting pools, waterfowl are now appearing to rest and nest.

But in most cases now, game wardens are handling wild animals that appear in town with kid gloves. In Denver they catch foxes, in Dallas, herons, in Pennsylvania, black bears. They also catch raccoons, opossums and beavers. All of them are carefully conducted back to the wilds.

Hodge asserts this may not be the best solution. "There are not many studies on this, but those few showed that over 50 percent of small animals didn't

survive three months after relocation, because the new environment was at carrying capacity. They were in town because they had found a niche, and in the wilds, the newcomers were driven off by resident animals, or there was inadequate range, and if they weren't killed by a predator or car on the highway, they would wander back and take shelter in another urban situation and start the problem all over again. We consider relocation a course of last resort."

Meanwhile, bird specialists are reintroducing peregrine falcons from Boston and Baltimore to Minneapolis-St. Paul. The raptors treat high-rise buildings and bridges just like the cliffs they naturally call home. They are teaching us another lesson about the food chain, according to Dr. Lowell Adams of the National Institute for Urban Wildlife in Maryland.

"We find peregrines die from eating rats or pigeons poisoned with bait," he laments. "They get hit by cars in these cities, too."

This is Integrated Pest Management at its most basic. Peregrines have been suggested

GLASNOST IN THE WILD

When animals damage our property, "our traditional solution has been to kill them," says Guy Hodge, of the Humane Society of the United States. "We wanted to insure sterile environments around our homes and offices."

Hodge once compiled a list from nationwide household complaints, and tallied more than 120 vertebrate species. "In the right circumstances, anyone can regard any animal as a pest." Partly as a result of that work, he co-authored, with William Bridgeland, Donald Burton, John Grandy and John Haddian, the *Pocket Guide to the Humane Control of Wildlife in Cities & Towns*.

Now Hodge believes that if humans learn about the habits and habitats of wild animals, they will come to see how easy it is to coexist with them. "The trick is to think like a wild animal," he says.

The first step is to analyze your situation. Most wildlife is territorial; an individual animal remains in an area, its home range, because that site meets its requirements for food and shelter. Animals concentrate in areas where they can be fed or pilfer food, and where they can hide. If you have a problem with an animal, your first challenge is to identify what attracts it. Then you can take corrective action.

The best methods are the simplest. Put out your garbage in the morning rather than at night, or anchor the garbage can to a solid object. Hodge also recommends setting an infrared motion sensor near garbage cans or bird feeders that will switch on a floodlight when an intruder approaches. The sudden light will generally frighten away secretive, nocturnal animals.

Clearing away brush or raising woodpiles off the ground will also help eliminate cover and nesting places for small animals.

Outdoors, you can use a combination of options. To thwart birds attempting to roost on level surfaces, change the angles of those surfaces to 60 degrees where possible so they can't get a foothold. Where that is not possible, attach anything from prickly porcupine wire to Slinky toys along ledges, railings and rooftops, and use weatherproof, synthetic bird netting to cover fruit and vegetable plants and block eaves.

In ponds and pools where waterfowl collect, Hodge suggests running your pool cleaning unit, or getting a solar-powered toy boat, and setting its rudder to sail in circles. These items will harmlessly drive the fowl away.

Repellents are also useful. For moles, Hodge suggests stuffing old sweatsocks down their burrows and hanging a bag of human hair to keep deer, rabbits and other wild animals away from ornamental trees and vegetable gardens. Animals associate the human scent with danger.

Once you know what attracts an animal to your property, you can control its access. Then, you can set up attractants where you want them, and treat yourself to hours of enjoyable observation.

Photo: Wendy Shattil & Bob Rozinsky



structures and spaces we humans create. They include everything from songbirds, grackles and gulls, to mice, opossums and flying squirrels. They have not only adapted to the human environment, humans have changed them.

A century ago, most birds in the US were migratory. Now fewer than half are, notes University of Waterloo, Ontario, urban planner Robert Dorney. The US Fish and Wildlife Service records steep declines in species of field-loving songbirds such as meadowlarks and mourning doves. They have been displaced by pigeons, starlings and sparrows that are better adapted to nesting year-round in human structures.

In the mid-1980s, University of Maryland research ecologist Vagn Flygler studied gray squirrels in Washington, DC, and found striking differences from rural squirrels. Coats showed a variety of colors rarely found in the wild—blacks, whites, ivories and russets.

Nowhere is the difference between reality, and our romantic notions about wild ani-

as a solution for Evansville, Indiana where residents believe they have pigeon problems. The good citizens have already tried poisoning, glue, wiring ledges and trapping, and even opened a one-day hunting season on them across the Ohio River in Henderson, Kentucky.

Currently, residents are tossing them feed treated with a chemical to make them sterile, and putting inflatable owls on trees and buildings to scare them. Jim Dirk, a reporter for the Evansville *Courier*, says people can't recall exactly why they consider pigeons such a problem, except that 15 years ago, a local child allegedly died of histoplasmosis after playing with pigeon droppings.

"This may be an urban legend, like the rat in the Coke bottle or the poodle in the microwave," Dirk allows. "Everybody says they know the grandmother, but nobody knows the child's name anymore."

Myths, fear and territoriality thus complicate our attitudes toward urban wildlife.

The seminal study of urban attitudes to wildlife was done by Michael O'Donnell and Larry VanDruff in 1982 in metropolitan Syracuse, New York. Basically, says O'Donnell, "In a rural environment, labeling an animal as a pest is based on economic considerations. In the urban environment, it depends upon individual experience, attitudes and aesthetic values. Urbanites without rural backgrounds tended to be more emotionally attached to animals than those with rural backgrounds." Overall, "an animal that is a nuisance to one household may be a joy to watch for another household."

The two researchers found that about a third of suburban households reported problems, as opposed to a quarter of urban households. The most common complaints were general nuisance, yard and vegetable garden damage, stealing feeder food and animals inside the house. Squirrels were the most pesky critters, followed by rabbits, skunks, pigeons, mice, raccoons, moles and woodchucks.

It is noteworthy how many people landscape and garden, and then are surprised that animals come there to live and eat.

"There's a good number of people who don't perceive themselves as being part of the ecosystem," shrugs Hodge. The solution to this obtuseness, he and Dr. Adams agree, is education.

Adams cautiously cites findings in the National Survey of Hunting, Fishing and Wildlife-Associated Recreation as evidence that awareness may be improving. The survey is sponsored every five years by the US Fish and Wildlife Service and US Bureau of the Census.

"There's some question of whether there's an actual increase in interest, or we are just measuring it better," Adams tempts. "But the 1980 survey was the first one that included questions dealing with non-game species and wildlife near people's

homes. In 1985, half of the 80 million people surveyed said they take some interest in animals—feeding, photography and activities such as tree and shrub-planting to enhance property for animals."

Here and there, wildlife departments across the country are coming to rely more on education than violent action. Barbara Snow of the Fairfax County, Virginia, animal control department says they initiated a "tolerate, exclude, then trap" policy last December after years of research and practice. "The animals are here, and we can coexist with them," she concludes. Trapping is a last resort. Says Snow, "If we open the garage door and find a raccoon sleeping in the corner, we just let it out."


And in some 30 states, citizens can contribute some of their income taxes to non-game wildlife programs that enhance urban and suburban habitats.

In the field, however, news is mixed. Boulder, Colorado, overrun with hundreds of geese last year, found a solution in shipping about 350 of them via special "goose-moving trailers" to the honker-deprived state of Kansas.

In Seattle, Washington, every spring, California sea lions show up for a free lunch

on migrating steelhead at the Ballard Locks, decimating the run by some 60 percent (a sea lion eats 10 percent of his average 600 pound weight in fish each day). Since the lions are covered by the Marine Mammal Protection Act, wildlife officials in 1989 set about trapping, tagging and transporting them out of the area.

Brent Norberg, the marine mammal coordinator at the Seattle regional office of the National Marine Fisheries Service, says specialists learned, "you don't have to use anesthesia to handle them, and they will come back even from their breeding grounds. But removing experienced predators may be an effective way to buy time for the steelhead run. Though they may be replaced by other predators, between the time it takes them to learn to become efficient, and the absence of the old hands, you have saved that many more fish."

All these experiences underline just one thing: The best way to coexist with animals is "think like they do," says Guy Hodge. "If we create attractive habitats for them, they will come. If we don't, they won't." 

Writer Marty Westerman works from his base in Seattle, Washington.

WHERE TO FIND THE WILDLIFE

The first place to find wildlife is in your own yard, says Dr. William Kunin, a zoologist at the University of Washington. "Birds and animals are attracted by things they can eat and places they can find shelter—bushes, woodpiles, birdhouses, trees, bird feeders, berry bushes, fruit trees, gar-

dens. If you feed them they'll come. You want to be careful not to leave food or garbage out, though, until you have observed your yard to see what appears over a few weeks. The last thing you want is rats going through your garbage."

Beyond the yard, look to the neighborhood for green spaces that harbor birds and small mammals and traditional wild areas, such as parks, preserves, river beds and caves that yield deer, hare, rabbit, lizards, snakes, squirrels, chipmunks and others. "They tend to be most where people are least," says Kunin. Local parks teem with wildlife day and night, golf courses with nocturnal creatures such as raccoons, opossums, skunks and even armadillos and frogs, at night when the golfers are home in bed.

"You'll find people follow certain paths routinely, and avoid certain areas routinely," notes Kunin. "If you mapped them out, you'd see huge areas people rarely go. The banks of creeks and canals,

the slough down by the industrial park, these will likely be rich in waterfowl, frogs and other small mammals."

If you live in a coastal town, you can witness migrations of sea mammals—sea lions, whales, dolphins and birds in season. In spring, fish ladders at dams and locks host the silvery salmon on their leaping journeys upstream to spawn.

Several sources can assist your search. Your local or state wildlife department will know the seasons for the different animals and birds. Local birding, photography and outdoor clubs, such as chapters of the National Audubon Society, Sierra Club and Nature Conservancy, and even outdoor retail outfitters will advise you with specific dates and times best for observations.

And then, you can just happen on things by accident, as the Washington State Wildlife Department's spokeswoman, Susan Ewing does.

"I see bird nests in the medians of highways, raptors like red-tailed hawks on top of light standards," she says, "and I always wonder why they do what they do. I find urban wildlife comforting, like raccoon tracks in snow when I get home. It reminds me things are working, and we can't totally control everything."



Photo: Wendy Shattil & Bob Rozinski

GARDENING WITH KIDS

By Linda Slater

Gardening can be a peaceful, ecological activity, almost a meditation. With children gardening can turn into a real-life, hands-on learning activity and can be a positive way for families to relate to one another, while children learn about self-sufficiency, eating healthy foods and respect for the land. The family can gradually improve the soil and each member learns Zen patience as the compost slowly cooks and the corn ripens. The garden provides a way to teach children about birds, insects, color, scent and perseverance. An organic garden provides food and bouquets for the table and a living laboratory for learning. Here are some tips for gardening with children.

1. Teach your children about organic gardening and the benefits of compost. Save all your pesticide-free grass clippings, kitchen wastes (except meats) and garden leaves, and layer them with manure and soil to create a dark, crumbly, pleasant-smelling substance to your soil.
2. Teach your children about natural fertilizers such as manure, fish or bat fertilizer, granite

dust and Greensand. Let your kids help you test your soil and buy some earthworms which add valuable castings to your soil.


3. Consider allowing each child to plant his or her own small garden. It can be in a large pot on the patio or a small four by four foot square of soil. Small children enjoy planting large seeds like sunflowers, beans, peas and squash. They enjoy growing a "bean room," too. Simply put up four "walls" made of large tree branch clippings, wire or wooden stakes and plant pole beans all around the perimeter. The beans will form a private playhouse and can be harvested for the family in August.

4. An old garden rule is to "put in more than you take out." Kids can learn about soil replenishment by watching their parents sowing cover crops in the fall to be tilled in during the spring months. Good cover crops are winter wheat, rye, kale, soybeans or barley. The cover crop aerates heavy soil, prevents erosion and adds nutrients.

5. Learn to make your own "bug sprays" or shop for organic controls with the family. We can teach children, too, that "perfect" produce is not necessary. Children can learn about the hand-picking of insects instead of the use of sprays and beneficial insects such as ladybugs, green lacewings and praying mantises.

6. Try planting a "nectar garden." Bees and butterflies cross-pollinate vegetables and flowers and add to the beauty of your yard while hummingbirds roam the beds for nectar flowers such as honeysuckle, lilac, lavender, marigold, sweet william, coneflower, foxglove, liatris, day lily and borage. Butterfly caterpillars love dill, parsley, nasturtiums and violets.

7. Think of the backyard and front yard as two more rooms of the family house. Some folks plow up the entire yard and put in a series of mulched paths, raised beds and trees. A small city yard might become two large raised beds of buffalo grass and wildflowers bordered by edible fruit and brick paths, with wooden benches for children to read and dream on!

The next generation of gardeners is important. Gardening can be a source of wisdom, fun and rewards for every member of the family. 



Refrigerator recycling plant in Minneapolis.

GREEN ICE

Your refrigerator, the most used appliance in your household, may be waiting for some special attention to help bring it into the green decade. Refrigerators can account for as much as one-third of household energy expenditure and 2 percent to 4 percent of the refrigerator's energy is lost every day by hungry people standing with the door open, looking for culinary delights. But there's more to a green refrigerator than knowing how to read the energy efficiency chart attached to the new model you're drooling to buy.

Du Pont has invested \$240 million to develop alternatives to CFCs, those nasty compounds that eat up the ozone layer when let loose into the atmosphere. The result of its work is a new family of 10 refrigerants you may find coming to a model near you in the not so distant future.

Also consider insulating your old one to make it last longer and work more efficiently. David Goldbeck notes in his design guide, *The Smart Kitchen*, that an average of 10 percent savings can be attained by taping on the sides and doors of the refrigerator just \$20 or \$25 worth of foil-faced rigid insulation—basically a payback of one year.

How can you safely dispose of the old one once you have found a new one? The answer a few years ago was leaving it in the garage until a safe way to dispose of the CFCs was found. Finally it has. Check around for appliance recycling programs, like Northeast Utilities' program in New England. The utility picks up spare operating refrigerators and freezers for free, to be dismantled in an environmentally safe way through Appliance Recycling Centers of America (ARCA), based in Minneapolis, Minnesota. ARCA's facility removes CFCs using a special evacuation system that prevents the contaminants from venting into the atmosphere. The recovered CFCs are prepared for reuse and the appliance cabinet is sent to a scrap metal dealer.

Do one or all, but do something to make the most used appliance in your house a little greener.

—Elizabeth Darby Junkin



Photo: Kenneth & Talita Paolini/ProFiles West



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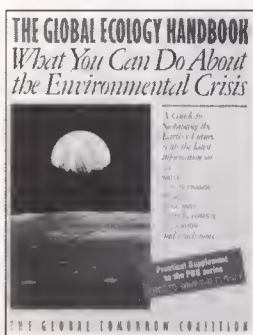
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- Consider eating fewer animal products:
 - especially meat, remembering that about 50 percent of all U.S. water use goes to the inefficient production of feed for livestock, instead of to crops for direct human consumption.

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**IF YOU'RE NOT
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IT ALL AWAY.**

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Photo: Claus Meyer/Black Star



In the capital of oil-rich Venezuela, smog hangs over jammed streets. The ground sprouts more skyscrapers than tropical trees, and a liter of gas is three times cheaper than a liter of potable water. A flimsy economic base and mounting social problems leave little public funding for environmental concerns. Caracas doesn't seem like an environmentally friendly place but it's the scene of some progressive planning, including one project aimed at saving the Amazon rainforest's purest indigenous peoples, the Yanomami.

Miles from Caracas' clogged streets, the Yanomami live in balance with the lush and delicate rainforest. Scattered across some 60,000 square miles in southern Venezuela and northern Brazil, they are the least acculturated tribe in the world. But increased contact with gold miners, missionaries and even tourists, is jeopardizing their future and the rainforest they depend on for survival.

The most visible and severe harm is being caused by the thousands of gold prospectors infiltrating the Venezuelan Amazon. Known as *garimpeiros*, the miners have already ravaged parts of Brazil's forest and left Yanomami tribes there ailing. In the last three years, Brazil's Yanomami population has dropped from 11,500 to about 8,500. Environmentalists blame the plunge mainly on mining activity. The prospectors use mercury to extract gold and leave the residue to poison streams and rivers. Meanwhile, they spread

IN SEARCH OF REFUGE

By Nancy Stoetzer

diseases to the indigenous village camps by making contact with people previously unexposed to the viruses and bacteria of outsiders. Measles, malaria, even colds, are killing the Yanomami.

Having witnessed what they call the "pillaging" of Brazil's forest and tribal populations, environmentalists here are determined to squash threats before they reach the destruction stage. An estimated 14,000 Yanomami live in Venezuela's Amazon. The majority of the miners that have come to the Venezuelan Amazon were squeezed across the border from Brazil after that government tried to curb illegal mining by blowing up the prospectors' web of airstrips. The Venezuelan environmentalists are disappointed with Brazil's short-sighted answer to the problem. Since rainforests and tribal people know no boundaries, pushing miners across the border does nothing to save either. In late February, the Venezuelan government arrested 1,740 illegal

miners in and around the Amazon. The government hopes to keep cracking down but law enforcement forces aren't abundant and policing the wild Amazon isn't easy.

Ideally, Venezuela and Brazil would work together to protect the forest and save the Yanomami, says Aldemaro Romero Diaz, founder and director of Venezuela's largest conservation organization, Bioma. "What we need on this issue is international cooperation," he said.

Romero blames improper Brazilian policies for massacring the Yanomami. "If we don't do something now, Venezuela will have the same mess on its hands," he said.

Because the chances of creating an international accord are slim, Venezuela is emerging as the Yanomami's last hope. A December conference on the tribe drew scientists from around the world. The consensus was clear: If Venezuela doesn't protect the Yanomami, they will disappear.

One project calls for the creation of a biosphere reserve deep in Venezuela's Amazon federal territory near the Siapa River just north of the Brazilian border. The plan calls for the government to set aside as much as 80 by 200 kilometers of land for controlled protection. Called the Siapa River Basin Project, the plan pivots around the most

Yanomami at a malaria center in Surucucu, Brazil, where they live 50 to 130 per house.

pristine land and Yanomami groups known in Venezuela's Amazon. The reserve will prohibit infiltration by *garimpeiros* but also missionaries, merchants and tourists.

Venezuela's President Carlos Andres Perez is expected to approve the plan. Perez, who was the first Latin American president to name a minister of the environment, wants to be known as an environmentally friendly leader even if he can't earmark governmental funds for big projects.

The reserve is the brainchild of Charles Brewer-Carias, the country's well-known expeditionist and naturalist. He is working with Napoleon Chagnon, an anthropologist from the University of Santa Barbara at California, who has studied the Yanomami for more than 25 years. Brewer-Carias, Chagnon and their crew discovered the proposed reserves' pristine core during an expedition last September. The group penetrated an area previously untouched by outside forces and made contact with Yanomami groups that were healthy, growing and free from the problems associated with outside contact. That area would serve as the project's core.

The reserve would be a first for the Amazon in that its aim is to protect the inner-connected relationships within the rainforest. "The plants, the trees, the frogs and yes, the Yanomami," says Brewer-Carias, who started out 30 years ago as a dental anthropologist. He does not want the reserve to be thought of as an "Indian reservation" or an unnatural project. He sees the project as something the outside world owes to the Yanomami: one last chance to live as they have for thousands of years.

One of the most radical aspects of the project is that it would override an archaic but revered law that allows missionaries uncontrolled access to the Amazon federal territory. A remnant of colonial times, the law is being challenged by environmentalists. In the project, missionaries would be prohibited contact with any Indian groups. Those currently working there would have to leave.

In a country where 95 percent of the population calls itself Roman Catholic, shutting out missionaries is a sensitive and controversial topic. Two church groups run missionary projects in the Amazon. The Catholic church works throughout the rainforest and sponsors a Yanomami-run cooperative in Ocamá that sells baskets and Brazil nuts. Another group, a US-based Protestant mission called New Tribes, has 47 years of work invested in the Amazon as well as a dozen airplanes and an estimated 35 landing strips. New Tribes is the group most praised—and most criticized—throughout Venezuela.

Like the miners, both groups have been criticized for recklessly mingling with the Yanomami and starting the spread of diseases that are fatal to tribes without a developed immune system. According to

Brewer-Carias, up to 66 percent of the deaths near some missions are caused by diseases the Yanomami initially contracted from church workers. Scientists who work with the tribe are careful to avoid needless contact by not sharing with the Indians anything that may have saliva and the bacteria it carries.

Brewer-Carias knows how explosive the missionary debate is here, so he now couches his criticism in softer terms: "The missionaries are giving their lives, wearing themselves out for God to save souls. That's noble," he says, "but the point is our religion has no place in their lives. The Yanomami have nothing to be saved from but ourselves."

Besides the religious implications, there is concern over the cultural changes imposed on the Yanomami by outside forces. For example, missionaries bring projectors to the Amazon and show films via generators. They speak to the tribes in English or Spanish, rarely the Yanomami language. In some villages they have distributed pots and pans, bringing the need for traditional pottery making methods to a halt. And in what some call the most abusive show of ignorance, the

*The project is something
the outside world owes to
the Yanomami: one last
chance to live as they have
for thousands of years.*

missionaries are teaching the Indians to clear the forest and plant crops.

But missionaries aren't the only ones who would be excluded from the reserve. Ecotourists, no matter how well intentioned, would not be allowed in the reserve either. Tourists rarely venture that deep into the Amazon; nonetheless, they crop up—often using the missionaries' airstrips—and many are not versed on safe ways to deal with the people or the forest.

At the Yanomami conference in December, environmentalists chastised tourists:

"Tourists see those naked natives as nothing more than an object of curiosity, an exotic fantasy. With this approach we will never come to understand them," said Jesus Ignacio Cardozo, president of the Venezuelan Foundation for Anthropological Research, sponsors of the conference.

Though for practical purposes, restricting tourists is necessary, the theory has its drawbacks. People who choose to vacation in the Amazon are often strong advocates of envi-


ronmental concerns and potential supporters of projects like the biosphere reserve.

Funding for the reserve is still being hashed out. The greatest expense and logistical challenge will be in policing the area. Brewer-Carias said a debt-for-nature swap is in the works. He hopes other funding also comes through.

When the biosphere project gets under way, the Yanomami there will continue living as they have for thousands of years. Their villages consist of thatched roof huts formed in a communal circle called a *shabano*. The groups are based on parental ties. Once a village numbers 200 to 250, parental relationships weaken and they form splinter groups that settle elsewhere. The Yanomami are often called a fierce and violent people, traits that have fueled attempts to "civilize" them. They believe strongly in the miraculous, medicinal powers of the rainforest.

In the meantime, Brewer-Carias and Chagnon started work on another Venezuelan-based project, *El Bosque Tropical Como Habitat del Hombre* or "The Tropical Rainforest as Man's Habitat." The project, which officially began in January, will research the intimate relationship between the rainforest and all its tribal people, including the Yanomami. The \$5 million to \$10 million project is expected to last 10 years. Already signed on are 120 scientists from around the world who will make periodic research trips to the Amazon. One of the project's main goals is to enter the 21st century with a deeper global appreciation of the forest and its people.

Given the two Amazon projects in the works, the environmental mood in Venezuela is gaining momentum. One of the conservation movement's main goals here is to create an international voice on issues affecting Venezuela and the rest of Latin America. Romero, director of Bioma, feels that pairing ecology with development loans is the only way Latin America will be able to pay for protection, and he says it may get deep-pocketed investors involved in "green" development. Given the World Bank's recent interest in environmental issues, Romero is hopeful that development and ecology will continue to be paired. In the late 1980s, environmental pressure was mounting to protect the Amazon so the bank cancelled financing for a road from Brazil to Peru when construction threatened to damage the tropical forest.

Meanwhile, conservationists are serious about getting the message out on the precarious state of the environment here. As for the future of the Yanomami and the rainforest, one conservationist said: "It's up to us to accept this responsibility. We need to act on this now." 

Reporter Nancy Stoetzer is based in Caracas, Venezuela.



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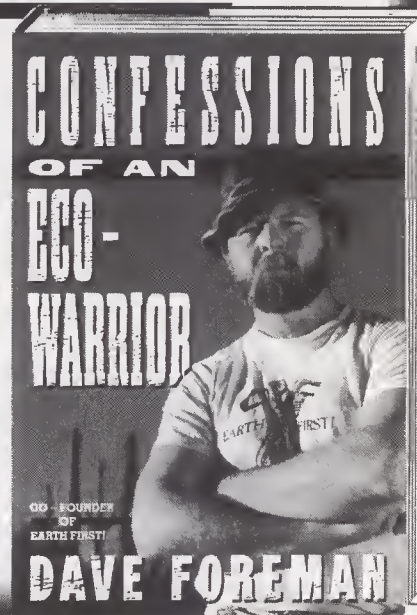
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CONNECTIONS

VOLUNTEER OPPORTUNITIES AND ENVIRONMENTAL JOBS

CRY WOLF

The TIMBER WOLF INFORMATION NETWORK needs volunteers to join their Adopt-A-Wolf Pack Program. The program educates teachers, student groups, citizen groups and families about the recovery of the wolves in Wisconsin and Michigan's Upper Peninsula. The \$75 annual fee pays for educational materials and the continuing study and recovery of the wolf population. Contact TIMBER WOLF INFORMATION NETWORK, E110 Emmons Creek Rd., Waupaca, WI 54981, (715) 258-7247.

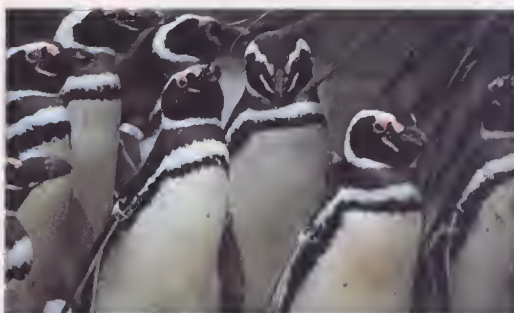
EARTH HEROES

EDDIE BAUER seeks nominations of people whose commitment to the environment, lifetime dedication or one-time contribution, qualifies them as a "Hero for the Earth." Award winners will be announced in the fall. Six heroes will be named in 1991, and each will be presented a \$10,000 award in the name of the environmental cause they assist. To nominate a hero, write a brief description of their activities and send the information to EDDIE BAUER, "Heroes for the Earth," 15010 NE 36th St., Redmond, WA 98052, (206) 882-6100.

UNDER THE BOARDWALK



THE NATURE CONSERVANCY has volunteer opportunities at many of its 1,600 preserves across the country. Volunteer activities range from building boardwalks at a wetlands preserve to maintaining and clearing trails, planting trees or assisting in prescribed burnings in prairie states. Contact Robert Byrne, THE NATURE CONSERVANCY, 1815 N. Lynn St., Ste. 400, Arlington, VA 22209, (703) 841-4832.



ADOPT-AN-ANIMAL

The SAN FRANCISCO ZOOLOGICAL SOCIETY needs volunteers to join an Adopt-an-Animal Program. The cost of the "adoption" programs vary. The money is used for habitat improvement and to support breeding and conservation programs. A folio with adoption certificate, a color photo of the animal and nature notes on its life and habits are included with each adoption. Contact Adopt-an-Animal Program, SAN FRANCISCO ZOOLOGICAL SOCIETY, 1 Zoo Rd., San Francisco, CA 94132, (415) 753-7061.

BUILD A BRIDGE

The AMERICAN HIKING SOCIETY needs summer volunteers to help preserve America's parks and forests. Volunteers spend 10 days on a variety of projects ranging from trail maintenance in Texas to bridge building in Wyoming. Most of the work sites are in remote and primitive areas. Volunteers must be at least 16 years old, experienced hikers and physically fit. Registration fee required. Winter, spring and fall projects also available. For free information about the program, send a stamped, self-addressed envelope to AMERICAN HIKING SOCIETY, Volunteer Vacations, P.O. Box 86, Dept. AHS/VV, North Scituate, MA 02060, (617) 545-7019.

LITERALLY LITTORAL

AMERICAN LITTORAL SOCIETY needs volunteers to help clean and monitor shorelines in the New York and New Jersey area. Volunteers will be trained to measure dissolved oxygen, temperature, salinity and turbidity of water. Participants will also conduct routine biological monitoring at the sites. Contact the Bay Keeper, c/o AMERICAN LITTORAL SOCIETY, Sandy Hook, Highlands, NJ 07732, (908) 291-0055.

VOLUNTEER ACTIVITIES

The volunteer opportunities listed here differ from each other. Interested persons should contact the organizations to find out details about the activities, such as where the opportunities are available, whether housing is provided, skills desired, type of commitment expected and whether other opportunities exist.

Organizations wishing to publicize environmentally oriented volunteer activities may do so, free of charge, by sending complete information to: **Connections Editor, BZZWORM, 2305 Canyon Blvd., Ste. 206, Boulder, CO 80302.**

JOHNNY ELMSEED

The ELM RESEARCH INSTITUTE is seeking volunteers to assist in the "Johnny Elmseed Project." Volunteers will distribute the new, disease-resistant American Liberty elm to areas across the nation. Volunteers may also help with organizing the Conscientious Injectors Program. Participants of this program inject mature American elms to protect them from Dutch elm disease. Contact John P. Hansel, Executive Director, ELM RESEARCH INSTITUTE, Main St., Harrisville, NH 03450, (603) 827-3048, (800) FOR-ELMS.



BEAR HUGS
EARTHWATCH needs volunteers to track habituated bears in northern Minnesota and record their behavior. Volunteers will help live-trap, radio-collar and radio-track the bears and record and videotape the bears' activities. Volunteers may also participate in experiments designed to teach bears to leave garbage cans alone and in tests of harmless, bear-deterrent techniques. Two-room tents provided. Fee required. Contact **EARTHWATCH**, 680 Mount Auburn St., P.O. Box 403, Watertown, MA 02272, (617) 926-8200.



INTERNATIONAL COOPERATION

Summer volunteers are needed to join the **SUNIVERSITY RESEARCH EXPEDITIONS PROGRAM** on projects ranging from a survey of plants in the tropical forests of Ecuador to a study of how white pelicans are endangered by pesticide runoffs in California's Klamath Basin. A special week-long workshop at the Amazon Basin field station will unite US participants with Ecuadorian scientists and teachers. This international group will collaborate on strategies to save the vanishing forest lands. Opportunities to participate in archaeology projects, marine studies, animal behavior observations and art programs are also offered. No previous experience is necessary. Tax-deductible contribution to cover expenses is requested. For an application contact **UNIVERSITY RESEARCH EXPEDITIONS PROGRAM**, Desk H11, University of California, Berkeley, CA 94720, (415) 642-6586.

MARINE BIOLOGY

FOUNDATION FOR FIELD RESEARCH offers volunteer research positions worldwide in many fields. Areas of study include marine biology and mammalogy, archeology, botany and more. Volunteer positions are available in Grenada, Mexico, Africa, Ireland and elsewhere. Fee required. Contact **FOUNDATION FOR FIELD RESEARCH**, P.O. Box 2010, Alpine, CA 91903, (619) 445-9264.

WORLDWIDE WILDLIFE

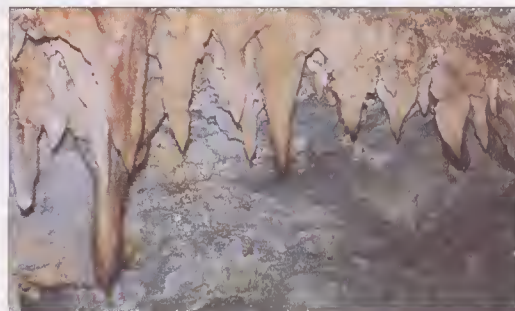
WILDLANDS STUDIES offers a worldwide field studies program to help protect wildlife and preserve wilderness environments. Summer activities include a first-hand search for the existence of endangered timber wolves in the Northern Cascades, on-site investigation of whale behavior in Canada, examinations of threatened Rocky Mountain wilderness land and studies of Hawaii's environments and cultures. Opportunities for field studies in Nepal, New Zealand, Thailand and Alaska offered as well. Participants can earn three to 14 university credits. Contact Crandall Bay, Director, **WILDLANDS STUDIES**, 3 Mosswood Cir., Box B, Cazadero, CA 95421, (707) 632-5665.

SOUND ENVIRONMENTAL INSTRUCTION

The **PURE SOUND SOCIETY** seeks volunteers to assist in educating elementary through high school students about the Puget Sound area. Participants explore the sound in longboats and teach the history of the area, the wildlife and the environmental impacts of the region. Past volunteers have helped identify, collect and deliver samples of eelgrass and kelp beds for scientific analysis. Contact Maribeth Crandell, **PURE SOUND SOCIETY**, P.O. Box 526, Vashon Island, WA 98070, (206) 463-5607.

PARK PARTICIPATION

TIMPANOGOS CAVE NATIONAL MONUMENT needs volunteers to participate in park operations such as maintenance, visitor information services and presenting interpretive programs. Benefits include training, job experience and a small reimbursement stipend for mileage and other job-related costs. Housing is available in nearby communities. Contact Mike Tranel, **TIMPANOGOS CAVE NATIONAL MONUMENT**, R.R. 3, Box 200, American Fork, UT 84003, (801) 756-5238.



TURTLE POWER

The **CARETTA RESEARCH PROJECT** offers hands-on research and conservation volunteer opportunities involving the threatened loggerhead sea turtle. Duties include patrolling the beaches on Wassaw Island, Georgia, searching for nesting turtles, recording nesting data and helping hatchlings into the water. Volunteers are needed for one week anytime through the first week of September. Fee required. Contact Director, **CARETTA RESEARCH PROJECT**, Dept. B, Savannah Science Museum, 4405 Paulsen St., Savannah, GA 31405, (912) 355-6705.

NO-TRACE CAMPING

TARGHEE NATIONAL FOREST offers a variety of volunteer positions including wildlife aides, range aides and wilderness rangers. Aides assist in wildlife inventories, range-grazing monitoring and bald eagle observation. Rangers help educate visitors about no-trace camping. Contact Ellen Spickerman, Volunteer Coordinator, **TARGHEE NATIONAL FOREST**, 3659 E. Ririe Hwy., Idaho Falls, ID 83401, (208) 523-1412.

Photo: Simon

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Photo: Donna Downing

CONSERVATION EDUCATION

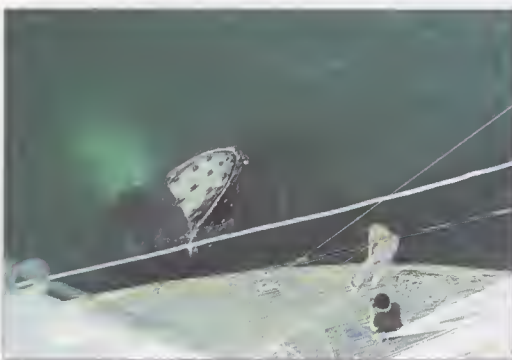
The ATLANTIC CENTER FOR THE ENVIRONMENT seeks volunteers to help in a variety of areas including conservation education, research, natural history, program administration, publications and community service. Opportunities are offered in northern England, eastern Canada, Scotland and the Caribbean. Contact Julie Early, Director of Program Operations, ATLANTIC CENTER FOR THE ENVIRONMENT, 39 S. Main St., Ipswich, MA 01938, (802) 229-0707.

VARIED VOLUNTEERS

The SIERRA CLUB is looking for volunteers in all 57 chapters. Opportunities include leading outings, environmental education programs, lobbying, leadership training, public speaking and newsletter publication. Contact your local chapter or SIERRA CLUB, 730 Polk St., San Francisco, CA 94109, (415) 776-2211.

FOREIGN ECOLOGY

The SCHOOL FOR FIELD STUDIES offers many volunteer opportunities for environmental work worldwide. Activities include study of plant communities and ecosystem ecology, wildlife ecology, marine biology, animal behavior and sustainable development. The 1991 program sites include Alaska, Mexico, Australia, Ecuador, Costa Rica, Kenya, the Caribbean and elsewhere. Fee required. Contact the SCHOOL FOR FIELD STUDIES, 16 Broadway, Beverly, MA 01915-2096, (508) 927-7777.



PARK AND RECREATE

NEW HAMPSHIRE DIVISION OF PARKS AND RECREATION offers statewide volunteer opportunities at lakes, mountains and seacoast areas. Volunteers are needed to assist park managers, coordinate education programs, work as campground hosts, staff visitor centers and serve as interpreters and information officers. Specific interests of the volunteer may be accommodated. Contact Mary Goodyear, P.O. Box 856, Concord, NH 03302, (603) 271-3254.

TURTLE TALK

The CARIBBEAN CONSERVATION CORPORATION needs volunteers to join their Turtles of Tortuguero research program in Costa Rica. Volunteers will assist with collection of biophysical data and monitor the nesting beach. Additional opportunities exist to simultaneously assist a team of herpetologists with a fresh water turtle study in the Tortuguero Lagoon and Beach. Room and board is available at the Green Turtle Research Station. Contact CARIBBEAN CONSERVATION CORPORATION, P.O. Box 2866, Gainesville, FL 32602, (904) 373-6441.



TALK ABOUT A VOLCANO

HALEAKALA NATIONAL PARK needs volunteer interpreters to provide information about volcanic activity, rainforests and unique ecosystems. Maintenance and visitor protection positions are also available. Volunteers should have some natural science background. A three-month commitment is required. Contact Pamela Rasfeld, VIP Coordinator, HALEAKALA NATIONAL PARK, P.O. Box 369, Makawao, Maui, HI 96768, (808) 572-9306.

RAPTOR RAP

ROCKY MOUNTAIN RAPTOR PROGRAM seeks volunteers to help with a wide range of opportunities including feeding, cage cleaning, administering antibiotics, performing physical therapy and general care for injured birds of prey. Volunteers have the opportunity to help raptors by increasing public awareness. A four-step training program teaches everything from general care procedures to therapy and treatment techniques. Contact ROCKY MOUNTAIN RAPTOR PROGRAM, Colorado State University, Veterinary Teaching Hospital, 300 W. Drake, Fort Collins, CO 80523, (303) 491-0398.

NINE TO FIVE

DEFENDERS OF WILDLIFE needs volunteers to help with office work in the Washington, DC office. Contact Julie York or Evan Hirsche, DEFENDERS OF WILDLIFE, 1244 19th St. NW, Washington, DC 20036, (202) 659 9510.

CREATE A LOOP

The TAHOE RIM TRAIL seeks volunteers to help with the planning, construction and maintenance of a 150-mile hiking and equestrian trail along the mountainous rim surrounding Lake Tahoe. Volunteers will help create a system of trailheads, access and loop trails and campsites. Volunteers will also assist in creating an educational information program. Contact Lynda Kjer, TAHOE RIM TRAIL, P.O. Box 10156, S. Lake Tahoe, CA 95731, (916) 577-0676.

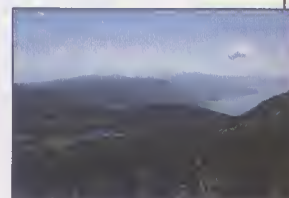


Photo: Caribbean Conservation Corp.

Photo: Bern Baxter

Photo: Laine Associates

DEVELOP A GOOD HABITAT
ARANSAS NATIONAL
WILDLIFE REFUGE needs volunteers to assist in habitat management projects, environmental education and scientific research studies. Volunteer duties may include carpentry, computer data input, painting, bird identification, guiding tours, exhibit development and environmental education interpretation. Contact Outdoor Recreation Planner, ARANSAS NATIONAL WILDLIFE REFUGE, P.O. Box 100, Austwell, TX 77950, (512) 286-3559.



Photo: W. Elton

A MILLER'S TALE

ROCK CREEK PARK needs volunteers to work as information assistants in the Rock Creek Park, Pierce Mill and the Old Stone House. A volunteer miller's apprentice is also needed to help work and maintain a 19th century grist mill. Miller's apprentice applicant must be 18 or older and must make a six-month commitment. Contact Volunteer Coordinator, ROCK CREEK PARK, 5000 Glover Rd. NW Washington, DC 20015, (202) 426-6832.

JUST THE ARTIFACTS

GEORGE WASHINGTON CARVER NATIONAL MONUMENT seeks volunteer interpreters to research, develop and present guided trail tours and other programs to park visitors. Resource management assistants are needed to help with prairie restoration, wildlife, vegetation and other projects. Volunteers to work in archives and cataloging artifacts are also needed. A variety of other projects are offered. Housing may be available for volunteers committing over 32 hours per week. Contact Steve McCoy, GEORGE WASHINGTON CARVER NATIONAL MONUMENT, P.O. Box 38, Diamond, MO 64840, (417) 325-4151.

WILDERNESS REHAB

WILLAMETTE NATIONAL FOREST needs volunteers in wilderness administration and rehabilitation positions. Small crews work for five to ten days informing and educating the public. Site cleanup and rehabilitation volunteers work with trail crews on specific projects and fire suppression. Exposure to harsh weather conditions likely. Volunteers must be in good shape and have map and compass skills. Contact USDA Forest Service, McKenzie Ranger District, McKenzie Bridge, OR 97413, (503) 822-3381.

RESTORATION AND RESEARCH

THE STUDENT CONSERVATION ASSOCIATION needs volunteers to help conserve America's wildlands and resources from the Everglades to Alaska's Denali National Park. Volunteers will assist with ecological restoration, trailwork, wildlife research and other tasks. Opportunities are available year-round. Room and board provided. Contact the STUDENT CONSERVATION ASSOCIATION, P.O. Box 550, Charles-town, NH 03603, (603) 826-4301.



Photo: Aransas Refuge

PAINTING LAKE MEAD

LAKE MEAD NATIONAL RECREATION AREA needs volunteers to help with maintenance on a skilled level. Duties include carpentry, painting, plumbing and electrical contracting. Free use of campground may be provided. Contact VIP Coordinator, LAKE MEAD NATIONAL RECREATION AREA, 601 Nevada Hwy., Boulder City, NV 89005, (702) 293-8918.

FOREIGN EXCHANGE
*facilitates information sharing
 of projects and ideas.
 Information regarding project
 needs around the world
 should be submitted to the
 Connections Editor.*

PANAMA PROJECT ANCON (Asociación Nacional para la Conservación de la Naturaleza) of Panama requests assistance in the form of equipment and literature for several ongoing projects. ANCON staff members need basic field equipment for rainforest patrols and also request conservation information. Equipment needed includes rainproof clothing, canteens, machetes, flashlights, binoculars, backpacks, tents, sleeping bags, nets (for the capture and tagging of birds and small animals), tagging equipment, humane traps for live capture and all types of literature on the plants and animals found in the tropics of Central America. ANCON is a nonprofit organization formed to protect and conserve Panama's natural resources. Contact Ronda Mosley-Rovi, ANCON, Apartado 1387, Panama 1, Republica de Panama, (507) 63-7950.

AFRICAN GREEN Through the planting and maintaining of trees, **TREES FOR AFRICA**'s mission is to conserve southern Africa's environment. **TREES FOR AFRICA** encourages and supports individual planting projects. Under the advisement of **TREES FOR AFRICA**, corporations and industries have also responded by sponsoring planting in disadvantaged communities for recreational developments. **TREES FOR AFRICA** also sponsors agroforestry and woodlot projects in rural areas. Environmental education centers are being established to provide ongoing training, field experience and logistic support for greening projects. **TREES FOR AFRICA** needs international volunteers to aid in the fundraising and all other aspects of these projects. Contact Jeunesse Searll, P.O. Box 447, Strathaven 2031, Transvaal, South Africa, (2711) 337-3000.

Resource Management Group, which specializes in wetlands and other surface resources, seeks an **ENVIRONMENTAL CONSULTANT**. Skills in biology, botany, soils, environmental law, map graphics and report writing are desirable. Part-time or flexible hours possible. Send resume, salary requirements and examples of writing and graphic skills to Bobbi Sabine, Resource Management Group, P.O. Box 487, Grand Haven, MI 49417-0487.

The Metropolitan District Commission offers an Assistant Resource Manager **INTERNSHIP** position at several parks in the Boston area. Intern will assist the resource management crew with trail construction, erosion control, timber management and maintenance of buildings, grounds and machinery. Three- to six-month internships available. Training, uniforms and equipment provided. Housing and stipend may be available. Personal transportation is recommended. Send letter of interest to Joshua Cline, Metropolitan District Commission, Breakheart Reservation, 177 Forest St., Saugus, MA 01906, (617) 223-0834.

INTERNSHIPS are available at the Center for Marine Conservation in such areas as marine debris and entanglement, sea turtle conservation, marine mammal conservation, marine habitat protection, fisheries conservation, marine biological diversity, administration, press relations and art publications. Interns are expected to work for at least three months, preferably full-time. College credit can be arranged. General knowledge of the marine environment is helpful but not essential. Send cover letter stating which program is of interest, dates available, resume and a writing sample to Internship Coordinator, Center For Marine Conservation, 1725 DeSales St.,

Organizations or businesses wishing to advertise paid environmental job opportunities may do so free of charge by sending complete information to: Connections Editor, Buzzworm, 2305 Canyon Blvd., Ste. 206, Boulder, CO 80302. Deadline is two months before date of issue desired. Listings run for eight weeks.

NW, Washington, DC 20036, (202) 429-5609.

The Lake Michigan Federation needs **INTERNS** to assist in research, policy-making, legislative comment and reporting for the Lake Michigan Monitor. School or work experience in science, political science, legal affairs or journalism preferred but not necessary. Send cover letter, resume, writing samples and references to Cameron Davis, Deputy Director, Lake Michigan Federation, 59 E. Van Buren, Ste. 2215, Chicago, IL 60605, (312) 939-0838.

INTERNSHIPS are available at the Research Farm/Quail Ridge Wilderness Conservancy located in northern California. Interns will learn concepts and practical methods of managing commercially-oriented fish ponds, diverse populations of plants and domestic and exotic species of mammals and birds. Interns may also have the opportunity to experience the strategies of land preservation efforts and may assist with a number of preserve-related activities. Internships of four to 12 months are preferred. College credit available. Room and board provided. Personal transportation is recommended. Contact Dr. Frank W. Maurer, Jr., 25344 County Rd. 95, Davis, CA 95616-9735, (916) 758-1387.

The Mono Lake Committee seeks **INTERNS** to operate the visitor center, assist with mail and membership work, provide public education, attend meetings and seminars and provide general support for all Mono Lake operations. Positions last for at least three months. Interns receive minimum wage and have low-cost housing available to them in Lee Vining.

Contact Shannon, Mono Lake Committee, P.O. Box 29, Lee Vining, CA 93541, (619) 647-6595.


The Conservancy, Inc. seeks **INTERNS** for science day camp, environmental protection, public relations, research and wild animal rehabilitation positions. Individuals should be at least juniors in college. Graduates are preferred. \$100 per week salary, plus housing. Other internship opportunities available. To request an application, send resume and three references to Georgia Jeppesen, Intern Coordinator, The Conservancy, Inc., 1450 Merrihue Dr., Naples, FL 33942, (813) 262-0304.

Wildlife International needs an **AQUATIC ECOLOGIST** to work in existing or anticipated studies designed to evaluate potential impacts of agricultural chemicals on aquatic habitats. Applicant should possess MS or equivalent experience in aquatic discipline, have knowledge of field sampling techniques and be able to travel frequently. Writing and computer skills preferred. Salary varies with experience. Send resume and list of three references to Personnel Director of Aquatic Field Programs, Wildlife International, Ltd., 305 Commerce Dr., Easton, MD 21601, (301) 822-8600.

Temporary **BOTANIST** needed at the Fremont National Forest. Duties include working as a district specialist for the location, identification and management of plant communities with special emphasis on sensitive plant species, and conducting and directing inventories for sensitive plants in timber sale and other project areas. Botanist will supervise crew

conducting field surveys and administer contracts for forest-sensitive plant inventories. Contact Fremont National Forest, Personnel Office, 524 N. G St., Lakeview, OR 97630, (503) 947-3334.

The Rainforest Action Network is looking for an **INTERN** to help with its tropical timber campaign. The intern will be involved in the day-to-day functioning of the campaign and also will conduct a research project on consumption of tropical timber in the US or Japan. The project is not yet clearly defined and is open to suggestions by the intern. Candidate should have previous knowledge of tropical rainforest issues, a basic understanding of the ecology of tropical rainforests, an understanding of the politics endemic to tropical rainforest countries and familiarity with nonprofit organizations and environmental activism. Research, writing and organizational skills required. Experience with an environmental organization is preferred, but not required. Submit resume and writing sample to Pamela Wellner, Tropical Timber Campaigner, Rainforest Action Network, 301 Broadway, Ste. A, San Francisco, CA 94133, (415) 398-4404.

The National Audubon Society needs a **CREATIVE MANAGER** for direct mail fundraising campaigns. Duties include originating copy and design, implementing national direct mail appeals and working with regional offices on copy for fundraising campaigns. Candidates must have demonstrated success in direct mail techniques and proven creative problem-solving ability. Fundraising experience preferred. Low- to mid-\$30,000 per year salary, plus benefits. Send resume to Human Resources Department, National Audubon Society, 950 Third Ave., New York, NY 10022. 



The Rights Stuff

ANIMAL RIGHTS INCITE A RIOT OF EMOTIONS, BUT ARE THEY PART OF THE ENVIRONMENTAL MOVEMENT?

BY MARGARET L. KNOX • ILLUSTRATIONS BY BRIAN FENCL

From the sidelines of the environmental movement comes a shrieking about something called animal rights. The pundits who track the nation's thinking about nature paint a neat spectrum, from left to right, from Animal Liberation Front and People for the Ethical Treatment of Animals to militant environmentalists such as Greenpeace to mainstream Audubon to the pro-hunting National Wildlife Federation and finally such sporting clubs as Ducks Unlimited. Memberships overlap, alliances are fluid, encounters are frequently on the cocktail circuit inside the Beltway, and yet between environmentalists and animal rights activists there is a fundamental distrust. Watching, say, Earth First! and the Fund for Animals plan an action together to save Montana's bison is rather like watching Roosevelt and Churchill smile stiffly beside Stalin at Yalta. You know the party won't last.

Animal rights activists like to think of themselves as a wing of environmentalism, but are they? Strictly speaking, environmentalism is concern for the environment—that is, the totality of our global ecosystem. They occasionally make useful allies, but animal rights activists by definition forsake the big picture, and where they diverge from the environmental movement, they can take votes and money away from them. Worse, claim environmentalists, they often get in the way of serious conservation work.

Environmentalists operate in the realm of ecology: the relationship of organisms to their surroundings. They at least attempt to listen to the entire fugue of rocks and trees, amoebas and heavy metals, dodos and rivers and styrofoam. Animal rights, by contrast, is a one-note samba. Where environmentalists worry about salt marshes and all the plants and

creatures therein, animal rights activists worry about the suffering of individual animals. Where environmentalists worry about the evolution of island endemics, animal rights activists worry about the suffering of individual animals. Where environmentalists worry about species extinctions, animal rights activists worry about the suffering of individual animals.

For as long as there have been conservationists in America, there have been people working for animals' welfare. The Massachusetts Society for the Prevention of Cruelty to Animals and the New England Anti-Vivisection Society were born around the same time as Congress set aside Yellowstone National Park. But it was Peter Singer's 1975 manifesto, *Animal Liberation*, that launched the more boisterous animal rights movement of today. Singer scorned the sloppy sentimentalism of the traditional humane societies, called humans to task as the "tyrant species," and assigned rights to all creatures with a central nervous system. In so doing, he crossed paths with environmental philosophers who were coming down off their anthropocentric thrones to become humble cells in a planetary organism. At times, Singer and such eco-philosophers as Arne Naess, Ed Abbey or even John Muir seem to be saying the same thing, that nature is not humankind's to be consumed frivolously, that humankind is not the only species deserving of consideration, that humans are members, not masters, of this world.

But now that the animal rights groups have graduated to clenched fists and megaphones, they often attack the very fundamentals of what environmentalists do. They present a whole new list of "Thou Shalt Nots," and on it are many of the traditional tools of wildlife management and environmental research.

Environmentalists and animal rights activists share a whopping guilt complex, but environmentalists still rest their case on science, while animal rights is essentially a religion. Animal rights leaders interviewed for this article were as likely to quote Krishna or St. Francis of Assisi as Singer. John Hoyt, president of the Humane Society of the United States, is an ordained Presbyterian minister whose stentorian rhetoric was learned at the knee of his father, an evangelical Baptist pastor. Frank Cullen, executive director of the New England Anti-Vivisection Society, comes from a long line of soul-searching Boston mystics and transcendentalists; his meatless, hide-less adult life is informed by such sects as India's Jains. Alex Pacheco was studying for the Catholic priesthood when he had the epiphany in a Toronto slaughterhouse that steered him to co-found People for the Ethical Treatment of Animals (PETA) in 1980. Pacheco's childhood in southern Mexico left its imprint; gory Latin images of axe-murdered saints haunt his violent descriptions of animal deaths. Pacheco and others make a religion of pain; I suffer, therefore I am.

While the movement's inspiration may be hellfire-and-brimstone, many of its leaders learned their politics from the left. George Cave, the bespectacled 42-year-old co-founder of

Trans-Species Unlimited, was a member of the Students for a Democratic Society during the Vietnam War and insists "the liberation of nonhuman animals is demanded by the same ethical principles which prohibit racism and sexism." Cullen, too, was active in the Civil Rights and anti-Vietnam War movements. "It was natural for supporters of women's and black liberation to move on to animal liberation," he says. To most animal rights activists, the cause seems a logical extension of compassion for the poor, the hungry, the crippled, the voiceless, the wretched of our own species.

In practice, the animal rights movement is no more unanimous than any heretical culture. John Hoyt, president of the Humane Society, earns in excess of \$100,000 a year, eats organic meat and shuns confrontational demonstrations. George Cave of Trans-Species Unlimited earns \$18,000 a year, stages mink memorial services and screeches at fur wearers, but stops short of theft and vandalism. Alex Pacheco, who jumped ship from the eco-raider Sea Shepherd to co-found PETA, earns \$19,000 a year and wishes "more of us had the guts" of the Animal Liberation Front, which is the only domestic organization on the FBI's terrorism list.



To be fair, the animal rights message is essentially just. Unnecessary cruelty is wrong, and even those who insist experimentation on animals is essential, such as the Incurably Ill for Animal Research, a strong voice against the animal rights movement, recognize steps can and should be taken to alleviate test animals' suffering. Chimpanzee researcher Jane Goodall, who accepts the need to use chimps in medical experiments, writes convincingly about the need to keep the gregarious primates in close contact with each other rather than isolated and miserable in solo cages. All the scientists

interviewed for this article professed acute awareness of their test animals' suffering—and how to minimize it. If they haven't stopped experimenting on animals they at least know they're being watched and that it has become politically correct to tip one's hat to the accommodation of individual animals.

The animal rights message is, in a crude way, useful in making the central point that humans ought not to believe themselves masters of the universe. The message makes good TV. A terrified chimp strapped to an operating table, a cuddly fox dangling from a leghold trap or a turkey watching a child eat Thanksgiving dinner, all deliver cheap shots to the tear duct. But while animal rights activists may raise valid questions about animal welfare, they may also sometimes get in the way of serious conservation work.

William Mautz, a passionate Sierra Club member and a biologist from the University of California at Irvine, talks about "extensive deposits of root casts" gone from San Clemente Island; he sputters about "massive damage to endemics;" he lists 48 "indigenous species of flora" gone and six plant and animal species endangered; and he blames all

this on the goats merchants deposited on the island 150 years ago so they would have a ready food supply each time they returned. What Mautz wants to do, for the good of the island ecosystem, is shoot the goats. But as soon as anyone suggests that, Cleveland Amory and the Fund for Animals show up waving posters of big-eyed goats and filing lawsuits. "It's pop ecology!" says Mautz. "It's eco-babble." And it is much more powerful than a lecture to a class of undergraduates; it makes network news.

The animal rights activists say there are nonlethal ways to protect threatened species and their habitat: Build fences, move predators or control exploding populations with contraceptives. It sounds easy, as if everyone can win. But with one to three species being lost each day to extinction, environmentalists aren't always willing to expend the extra time, cost and political will to investigate cumbersome alternatives that often backfire. Time and again, when endangered species are pitted against individual "sentient" creatures, conservation programs are derailed. In the Mojave Desert, the National Audubon Society supported the Bureau of Land Management's decision to poison ravens that preyed on the endangered desert tortoise; the Humane Society of the United States filed suit and stopped the program. At the Seal Beach National Wildlife Refuge in California, the Sierra Club supports a US Fish and Wildlife Service program to trap and kill non-native red foxes preying on two endangered bird species, the lightfooted clapper real and the least tern; a suit by the Animal Lovers Volunteer Association is pending.

"The fox is always portrayed as a warm fuzzy animal with a smile on his face," refuge manager Rick Coleman griped to the *Los Angeles Times*. "We're taking on the cover girl of the nouveau wildlife set."

When animal rights activists describe the way large rodents called coypu are crushed to death under trappers' boots—so that "their ribs shred their lungs," in Alex Pacheco's macabre words—Greg Linscombe scrambles to come up with a response. Linscombe, a biologist for the Louisiana Department of Fish and Wildlife, points out that the coypu are not native but were introduced from South America 60 years ago, that if they weren't controlled they'd eat right down to the floor of the Mississippi Delta, that the Cajuns who lease the rights to trap the coypu help keep the marshlands from being filled for condominiums. But already, your attention is drifting. A boot on a coypu is a more memorable image than a scientist talking about marshgrass.

Serious environmental debate rests on research, and on people for whom chromosomes are more important than photo-ops, had dry data on ozone depletion more stirring than photos of eviscerated cats. Where animal rights runs most obviously afoul of the overall environmental cause is where it disrupts the research needed to convince legislators and win votes. At the University of California at Davis, biologists were

using turkey vultures to study the effects of dioxins on the endangered California condor. Their results would have been used to help formulate state regulations for herbicides, but in 1987 the vultures were stolen. "No more sacrifices!" read the note left behind by the Animal Liberation Front. At the University of California at Irvine, Richard Phalen, a professor of community and environmental medicine, was using dogs to investigate whether a new coal-fired power plant would bring London-style killer smogs to southern California. In 1988, his dogs and another professor's disappeared. One of the dogs, Clyde with an electronic connector implanted in its head, showed up in PETA literature.

"Clyde was cheerful and healthy and spirited," fumes Phalen, "and he's being used to raise big bucks for those people."

Animal rights groups have done remarkably well at attracting donations in the past few years. The annual budget of the Humane Society of the United States soared from less than half a million dollars in 1970 to \$17 mil-

lion today. PETA, founded in 1980, has \$10 million to spend this year. The New England Anti-Vivisection Society has \$1.5 million. By the late 1980s, the Fur Information Council of America reported that the annual earnings of the 100 animal rights groups it tracks amounted to at least \$100 million in dues, donations, bequests and income producing assets.

Environmentalists tend to shrug off suggestions that the animal rights groups might be raiding their constituencies. But the 1980s are not going to go down in history as The Golden Age of Charity: Americans did not just come up with an additional \$100 million for animal rights. They made choices. And while the losers might be AIDS research or

the Ethiopian famine relief fund, chances are the money going to animal rights is being diverted from those groups whose goals are most easily confused with animal rights: the environmentalists. Like Los Angeles sucking Mono Lake dry, rival causes that champion cougars and bears are diverting enthusiasm that might otherwise be flowing to Greenpeace and the Sierra Club, or for that matter, Earth First! and Friends of the Bitterroot. In their scramble for hearts, minds and solvency, animal rights groups are borrowing both the issues and the respectability of classic environmentalism.

Animal rights activists make no secret of their desire to be perceived as environmentalists. "Some people will never accept animal rights," says Doug Moss, who quit *Animals Agenda* magazine to found *E* magazine. "But environmentalism opens doors. It used to be you weren't supposed to discuss religion or politics in polite company, but environmentalism is both and perfectly respectable. It's easy to broach at cocktail parties." Moss wants *E*, which is subtitled "The Environmental Magazine," to bridge the gap between conservation



JANE'S DILEMMA

By Sy Montgomery

The parlor at the Goodalls' family home in Bourne-mouth, England, is a welcoming room, furnished with sagging velvet armchairs, a big tiled fireplace and a pleasing Victorian jumble of mementos. Atop one chair coils an inflated rubber snake. An end table display: a photo of Jane with the late Konrad Lorenz, the founder of modern ethology. The mantel houses Jane's mother's collection of porcelain pigs. And over the fireplace hangs an oversized picture that dominates the room:

It's an enlargement of a photo which ran in *National Geographic* magazine. The fading glow of an African sunset silhouettes a slender young Jane, seated on the ground at her favorite spot; she called it the Peak. Watching and waiting from this open overlook, a thousand feet above Lake Tanganyika, she began her field studies of the wild chimpanzees of the Gombe Stream Reserve in Tanzania.

Although she'd pitched a tent near the pebbly shores below, Jane often used to sleep up there, to be nearer the chimps, and to be able to watch them awaken in their treetop night nests in the valley below. "I felt part of the mountain world around me," Jane said of her early days at the Peak, "completely alone, completely at peace." This is a photo of soul-soothing solitude.

And this is a photo of what Jane Goodall has lost.

These days, as the Institute that bears her name celebrates the 30-year anniversary of Goodall's work—the longest continuous study of any group of wild animals in history—she barely gets to see the famous chimpanzees of Gombe at all. In the past four years, she has spent no more than three weeks at a time in one place. In one 52-day visit to the US, for example, she passed through 14 cities, delivered 12 lectures, visited six zoos and one medical lab, organized a major conference, and gave seven big press conferences, two seminars and five dinner talks.

Her visits with Gombe's chimps—the children and grandchildren of the chimps she first came to know when she was only 26—today total only a few weeks a year. "I am utterly tired of packing and unpacking, often for stays of just one or two days," she complains. Yet there is no end in sight to her travels. She is repaying a debt she owes to the chimpanzees of Gombe.

A recent Gallup poll named Jane Goodall the single most recognizable scientist in the world. Through dozens of *National Geographic* films and magazine articles documenting her work, the world was captivated by this young ponytailed blonde, walking among wild chimps like Eve in Eden. Earlier observers of chimps had described them as savage, brutal beasts; but Goodall, watching the powerful apes at close range, illuminated a largely peaceful society in which individuals greeted one another with open-mouthed kisses and spent hours gently grooming one another.

Previous field scientists had considered all chimps alike; Goodall instead described a cast of highly distinct chimp personalities to whom she gave names like Mr. MacGregor and David Greybeard and Flo. At a time when most field scientists numbered their study subjects instead of named them, her focus on individual difference was maverick; and it also had tremendous popular appeal. When Flo died of old age in 1972, she merited an obituary in *The Sunday Times*.

Outside the safety of the Gombe Stream Reserve, however, chimpanzees were shot as pests and killed for bushmeat. Mothers were shot and their infants captured for zoos and to supply a growing entertainment industry. With growing investment in biomedical research, laboratories increasingly demanded chimps as stand-ins for humans. And for every live chimp delivered to an overseas buyer, ten died in the capture attempt or in transit. By the 1970s, chimps were extinct in four of the 25 countries where they once ranged.

Yet for years, conservationists and animal rights activists could not involve Goodall in the effort to protect chimps worldwide. Geza Teleki, a former Gombe researcher, later worked in Sierra Leone where chimps were routinely shot to supply meat for markets in neighboring Liberia. He

urged Goodall to throw her fame behind his efforts to stop the slaughter. "The fact that she would not get involved really disappointed me," he said.

Goodall's conspicuous silence abruptly ended in November, 1986. She was at a conference, organized by the director of the Chicago Academy of Sciences and titled, "Understanding Chimpanzees," meeting with primatologists from around the world. Participants were less concerned with new insights into chimp behavior than with whether there would soon be any wild chimpanzees left to study at all. There and then, recalls Teleki, "she suddenly threw herself into the issue of protecting chimps, to an exhausting degree."

"I was very isolated in Tanzania, living my own little life, watching the chimps and writing about them; selfish in a way," Goodall explains. "I've often thought, well, I should feel guilty that I wasn't in it long ago."

The Chicago conference coincided with the publication of what Goodall calls "The Big Book"—her monumental *The Chimpanzees of Gombe*, a scholarly compilation of 26 years of her data. That book, she said, "gave me the credibility that maybe I would have lacked in scientific circles. I think in fact that destiny determined the exact right moment to launch myself into it. I could not have done the book and this."

That weekend she organized the Committee for the Conservation and

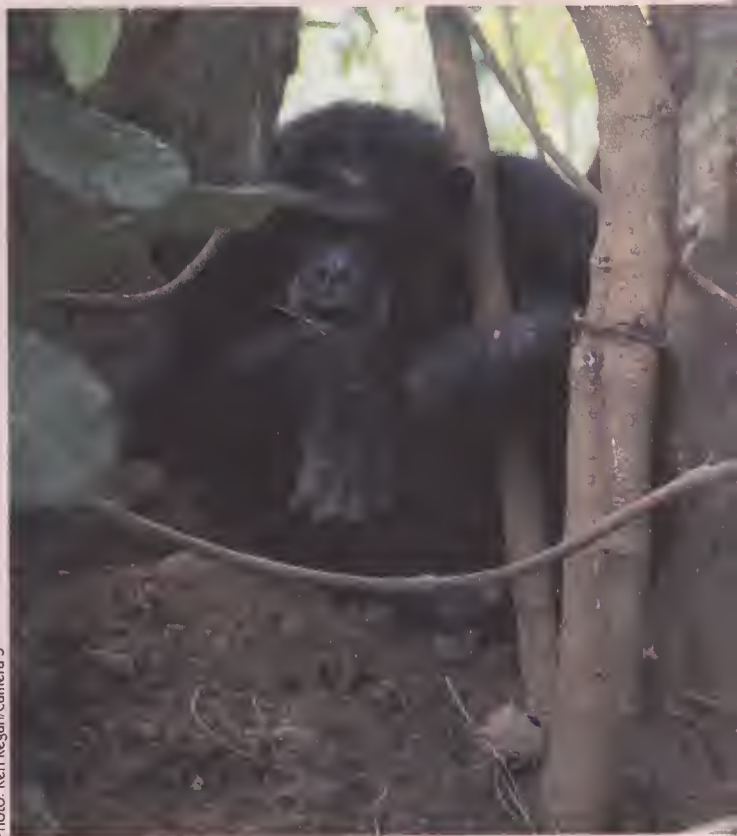


Photo: Ken Regan/Camera 5

Care of Chimpanzees. Its mission: to provide exhaustive scientific data supporting strict international protections for wild chimps, and sweeping improvements in provisions for the physical and psychological welfare of captive chimps.

Goodall went public. With her new message, she lobbied senators. She called press conferences. She made a spate of TV appearances.

Because she called for it, 54,000 people wrote to the US Fish and Wildlife Service in support of the petition to upgrade chimps' status from threatened to endangered—the most public participation in an endangered species issue in history. At her urging, thousands of Americans have written their lawmakers to support the Improved Standards for Laboratory Animals Act, an amendment to the Animal Welfare Act. Yet it is impossible for even her most vocal critics to lump Goodall with the "humaniacs"—those animal rights activists who often come off sounding shrill and moralistic. Goodall is too reasonable for that. "If you stopped all animal research now—bang—that would lead to extra human suffering,"

she freely acknowledges. She rejects any rationale that pits humans who have benefited from medical advances against the welfare of animals. "These are the people I want on my side," she says.

And meanwhile, Goodall's trips to Gombe have been repeatedly postponed.

These days, most of Goodall's contacts with chimps take place not in the Edenic freedom of Gombe, but in dirty cages at native African markets, in the antiseptic cubicles of medical research laboratories and on the hot beaches of the Canary Islands, where baby chimps are drugged and dressed in human clothes to serve as photographers' props.

Each of their faces speaks a litany of pain. She sees them in her sleep: The emaciated two-year-old male she met last fall in Zaire. Kept in a tiny box most of his life, his body had grown twisted and deformed. "No survivor of Auschwitz or Belsen could have looked worse," she remembers.

She will never forget the expressionless, three-year-old female she met at a Rockville, Maryland medical laboratory. As bereft of emotion as a coma victim, the youngster had been driven insane by loneliness, isolated in a 22-inch by 22-inch cage. "I shall be haunted forever by her eyes," Goodall says.



In the Canary Islands, Goodall and a National Geographic photographer found two pathetically drugged baby chimps, their thumbed feet crammed into tight little shoes. She hugged both chimps. "It was all their owners could do to detach the little clinging arms from around my neck," she wrote members of the Jane Goodall Institute in this spring's report. "It was almost more than I could stand. . . ."

But even Gombe offers Goodall little solace of late. "I almost dread going back there in the summertime," she said. The place is mobbed by tourists. Cameras click even as she washes her hair in the lake.

There are other problems as well. During her last visit, a teenage male, Frodo—a descendant of Jane's beloved Flo—dragged her down a slope, threw her to the ground, stomped on her and banged her head against a rock. Then he charged away—only to return moments later to repeat the performance. He finished off his last attack on Goodall by pushing her off the path; had some bushes not been in the way, she could have fallen 35 feet into rocky ravine below.

On occasion, chimps have shoved, stomped and hit Goodall before. She has not been the only victim of such abuse: Several of her assistants have unwillingly served as "display tools," when a charging male chimp would grab a person and drag them, kicking and screaming, often for several dozen yards. Male chimps normally show off their strength in this way with branches, but have also been known to use other objects and individuals, from clanging kerosene cans to terrified infant chimps (to whom males normally show great gentleness).

"Frodo was not trying to kill me," Goodall emphasizes. But his behavior could influence other, younger chimps. Frodo has lately taken to ambushing tourists—usually females—and "if they scream and run, Frodo thinks this the most wonderful fun," Goodall observes. The problem is not so much Frodo, but rather the pressure of tourism providing too much opportunity for power displays at a difficult time in this teenage chimp's life, says Jane. After 30 years of becoming accustomed to close contact with humans, the chimps are also in danger of getting diseases from the tourists. Tanzania plans to move the main tourist area of Gombe National Park from Goodall's camp to an area further north, where wildlife researchers are now habituating another group of chimps where they will hopefully not be quite so bold as those Jane has known for three decades. She hopes that with the tourists gone, Frodo and any others who might emulate him, will calm down.

Goodall's intimate, individual relationship with her study animals—at the root of the problem with Frodo versus tourists—has always distinguished and informed her science. Now it also animates her crusade. For while her opponents debate standards for laboratory "animal technicians" and how to "manage important breeding resources" in labs and zoos, Goodall, still slender and ponytailed but now graying, speaks from another perspective. People listen to her because she talks about individuals, with motives and memories, hopes and fears.

She describes chimps like Milla: Since Milla's mother was shot 19 years ago, she had been raised by humans, bereft of chimpanzee company. Then Goodall got involved, and arranged for her transfer to a sanctuary for orphaned and ex-captive chimps, in Zambia. There, Milla met Sandy, a shy, injured five-year-old chimp. Milla put out her arm to stroke his fur. She pouted her lips to kiss him. Finally she drew his whole body close to hers to groom him. Her whole body began to shake with heaving chimpanzee laughter; he was the first chimpanzee she had touched in 19 years.

Goodall introduces chimps like JoJo: a beautiful adult male living behind the bars of New York University's Laboratory for Experimental Medicine and Surgery in Primates. JoJo has been deliberately infected with the HIV (AIDS) virus for research purposes. Looking into JoJo's clear brown eyes, she began to cry. JoJo reached through the bars, his hand to her face, and licked her tears from his fingers.

When Jane Goodall submitted her first scientific article for publication nearly 30 years ago, the editors demanded she change every chimpanzee name to a number, every "who" to "which" and every "him" or "her" to "it." She refused; the paper was published anyway. Today, she risks these attacks anew: For her insistence upon the importance of each animal's individuality—and that its individual suffering matters—her critics portray her as over-sentimental, as anti-science. "What Goodall is opposed to," said Frederick King, who heads the Yerkes Regional Primate Research Center in Atlanta, "is keeping animals in cages. If you want to study disease, you must have periods of time when they are kept in isolation."

Jane Goodall told reporters at a Connecticut press conference that this only shows her opponents are running scared. "The feeling has been expressed that if Jane gets her way with chimps, that's the thin edge of the wedge," she said. "Next, they say, she's going to want to improve conditions for monkeys and dogs and all the other animals."

"You bet I do."

Sy Montgomery is the author of *Walking with the Great Apes: Jane Goodall, Dian Fossey, Birute Galdikas* (Houghton Mifflin, 1991).

issues and animal rights. *Animals Agenda* magazine is fast on his heels, having added the subtitle, "Helping Animals and the Earth," to its cover. The Humane Society of the United States last year created an "environmental division," and Cullen, of the New England Anti-Vivisection Society, called back to make sure it was noticed that his glossy magazine is printed on recycled paper.

Nevertheless, environmentalists keep giving animal rights the brushoff. Every time Doug Moss runs an article about animal rights in *E*, his readers flood him with angry mail. Unless you're predisposed to be receptive to animal rights tactics, they can be repugnant. Opening a squashed-cat mailing from PETA is rather like opening a homophobic packet from the Moral Majority at the height of the Mapplethorpe uproar. Context—or any kind of text—is overshadowed by the lurid photos.

When thousands of celebrants left Earth Day in Washington last year clutching glossy photos of hacked up animals distributed by PETA and the Anti-Vivisection Society, Tracy Stone, a longtime environmental activist from Missoula, Montana, couldn't help feeling the occasion had been hijacked.

"There was animal rights literature everywhere," says Stone of the Washington Earth Day festivities. "All these teenagers were going away thinking, 'so this is environmentalism.' They were being misinformed. It was propaganda." Doug Inkley, a lobbyist for the National Wildlife Federation, accuses animal rights activists of "muddling" the issues so "they can ride on the coattails of the conservation movement, which is well supported by the American public."

It is easy to dig up issues, tactics and incidents that set environmentalists apart from, if not at the throats of, animal rights activists. But if you listen closely, the real howling and gnashing of teeth about animal rights is coming from elsewhere, from groups representing science, industry, government and recreation, from the American Medical Association, the Fur Industry Council, the International Association of Fish and Wildlife Agencies and Safari Club International. "The animal controversy is one of the few political issues facing the biomedical community that is driven by an active opposition, but a righteous opposition, that is not averse to using dirty tactics and misrepresentation," an editorial in the *Journal of the National Cancer Institute* warns. The Fur Industry Council of America lists the animal rights no-nos, from eggs to wool, to circuses, and concludes, "Well that's their point of view. And even though we find it wildly irrational and impractical, we recognize the activists' right to their opinion."

Environmentalists, though, aren't in the business of defending profits or trophy hunting, or even medical research or state wildlife management policies. They are free to make strategic alliances with animal rights activists, and they often do.

Among animal rights activists and conservationists there are plenty of opportunities for cooperation. An animal whose habitat is shrinking is quite likely to suffer pain and die a miserable death. In that light, cooperation this year between the Humane Society of the United States and the National Audubon Society makes perfect sense. Both are working on legislation to ban the import of exotic birds. They don't quibble over whether the problem is mistreatment of parrots in airplanes and pet stores or decimation of toucans in dwindling figtree forests. Likewise, the Fund for Animals joined the Sierra Club in supporting last year's California initiative permanently banning mountain lion hunts. Sierra Club was worried about shrinking habitat and inaccurate lion counts; the fund was worried about bullets hitting warm flesh. Greenpeace, too, has found ready allies in the Animal Protection Institute of America for its campaign against the Navy's use of dolphins to carry nose-mounted guns. That one's easy: practicing for war is bad for the environment, bad for the species and bad for the animals.

Even the most academic environmental researchers occasionally are surprised by the boost they get from animal rights campaigns. Marc P. Hayes, a biologist at the University of Miami, is horrified about the decline in leopard frog populations since the late 1950s, when schools began using them for anatomy lessons. "Popular concern for frogs has been very limited," he laments. But then PETA and the New England Anti-Vivisection Society came along with their anti-dissection campaign and put Hayes's work in the public eye. Hayes, of course, insists dissection will always be necessary in advanced courses, but welcomes the attention the groups bring. "If they didn't have



this personal interest," says Hayes, "frogs wouldn't be an issue, except for biologists."

While environmentalists may cringe at PETA's photographs of flayed dogs, most understand the power of visual aids. A photograph of a dead black rhino with gaping holes where its horns once fit moves people to action, whether the picture was taken on behalf of a species or an individual animal. Everyone from Worldwide Fund for Nature to PETA supported a ban on the ivory trade to save the African elephant, and portraits of maggoty carcasses didn't harm that cause.

The Greenpeace campaign against the baby harp seal trade is even credited with inspiring the animal rights campaign against fur wearing in general. Greenpeace activists published bloody and horrific photographs of baby seals being clubbed to death, threw themselves in front of hunters and splashed paint on the seals to spoil their pelts. But the Greenpeace campaign ended when the European Economic Community banned the import of baby seal skins, while the animal rights activists kept marching. "We were concerned

with saving the species," says Blair Palese of Greenpeace in Washington, DC. "Killing off the newborns was the threat." Greenpeace distinguishes between newborns and adults, dwindling and healthy species, commercial and sustenance hunting, civil disobedience and the destruction of property (even if it's a fur coat swaggering down Madison Avenue).

All those distinctions make Alex Pacheco roll his eyes. "I don't know whether those were baby seals or grandmothers," says Pacheco. "That's where I part ways with the conservationists."

The Montana bison brouhaha is instructive of the good and the bad that can come from alliances between environmentalists and animal rights activists. The bison, like many migrating species, leave Yellowstone National Park in winter for the more hospitable low country of Montana. They carry a disease that Montana ranchers fear will spread to cattle, so the state allows hunters to shoot them as they cross the park boundary. Earth First! joins many other environmental groups in arguing that the bison should be allowed out of the park, at least onto adjacent public lands. If the plants and animals of Yellowstone are to survive, they reason, an area much greater than Yellowstone Park must be managed for the protection of wildlife, classic environmental thinking. The Fund for Animals, on the other hand, opposes the shooting of animals for fun.

Earth First! and the Fund for Animals joined forces last year to bring attention to the plight of the bison by disrupting a hunt. It was a marriage of convenience: Montana's perpetually strapped Earth First!ers let the wealthy New York-based Fund for Animals pick up the tab for travel, motel rooms and, ultimately, lawyers.

At first their "hunt-sab" seemed a victory for all the protesters. It made for great TV footage. Terrified bison careened up and down a lakeshore, pursued by wailing protestors and cursing hunters. The protestors sang different songs to the cameras—animal rights activist D.J. Schubert shrieked, "How would you like it if someone did that to you?" while Earth First!er John Lilburn explained to the cameras that "this is an ecosystem question."


But on the way to a national audience, the environmental issues surrounding Greater Yellowstone were reduced to a simple question of hunters versus anti-hunters. By the time the story reached the *London Times*, the Fund for Animals position was the only one aired. The whole protest turned into a disaster in Montana, where trying to stop hunting is like marching against motherhood. All of the intricate and vital ecosystem questions got lost in a whirlwind of anti-bunny-hugger vitriol. The "solution" now being offered is to have the National Park Service neuter, shoot or round up the bison before they ever reach the park boundary. Politically it might make sense for Montana, but it's not an "ecosystem solution."

Animal rights philosophies and lifestyles resonate powerfully among radical environmentalists who challenge the cynical, earth-raping powers that be. Many people who oppose grazing cattle on public lands become vegetarians. Others who are ashamed of America's war on predators extend their empathy to wolves in zoos or lions in circuses. Broadening a sensitivity about nature to include compassion for animals is compatible with environmental politics. But environmentalists have to be smart about choosing their targets—and allies. The biggest threat to geese and ducks and chimpanzees is not hunters or medical researchers but loss of habitat. In making alliances with animal rights activists to save habitat or prevent the extinction of a species, the trick is getting out the broader environmental message.

Animal rights activists complain conservationists only want to save animals so they can later consume them. In a way, they're right, if that means weighing the environmental cost of eating deer against that of eating corn or judging the environmental cost of wearing leather against that of wearing polypropylene made from fossil fuels. The earth will always

have an environment; it just might not always be an environment hospitable to humans. We care about bears and buttercups for themselves, but also for us humans. That's the selfish, Cartesian bottom line. I think, therefore I deserve a hospitable environment.

There is greed and humility, fraud and sincerity, thugishness and wit in the animal rights movement, just as there is among Bible Belt preachers or, for that matter, environmentalists. Animal rights isn't necessarily the enemy. Let's face it, in this era of war, greed and thoughtless consumption, the earth and all her creatures need all the allies they can get. But animal rights isn't necessarily environmentalism either, no matter what its proponents say. Those who

would fight the earth's battles can't help but make common cause with animal rights activists where their interests coincide—but carefully, lest the ever-elusive big picture doesn't get miniaturized into portraits of battered puppy dogs. 



Margaret L. Knox writes frequently for *Buzzworm* and other national magazines from her base in Missoula, Montana.

For further information on animal rights, contact the following:

Greenpeace USA
1436 U St. NW
Washington, DC 20009
(202) 462-1177

Humane Society of the United States
2100 L St. NW
Washington, DC 20037
(202) 452-1100

Fund for Animals
200 W. 57th St.
New York, NY 10019
(212) 246-2096

People for the Ethical Treatment of Animals
P.O. Box 42516
Washington, DC 20015
(301) 770-7382

MOORE TAKES ON ALL

Richard Moore seeks safe jobs, individual rights and a clean environment for people of color.

— BY CONGER BEASLEY, JR. —

RICHARD MOORE SITS BEHIND HIS DESK in his modest office at the headquarters of the SouthWest Organizing Project (SWOP), a few blocks from the heart of downtown Albuquerque, New Mexico. The room at the back of the reconverted adobe house is spare, the walls shorn of decorations, the floor uncarpeted. Moore's desk is cluttered with paper. The man has a lot on his mind: issues confronting the Chicano community in Albuquerque and the rest of New Mexico; civil and environmental rights issues affecting affiliated groups throughout the Southwest; issues over funding. His hands play lightly over the clutter, picking up a file, turning over a memo, reshuffling a list.

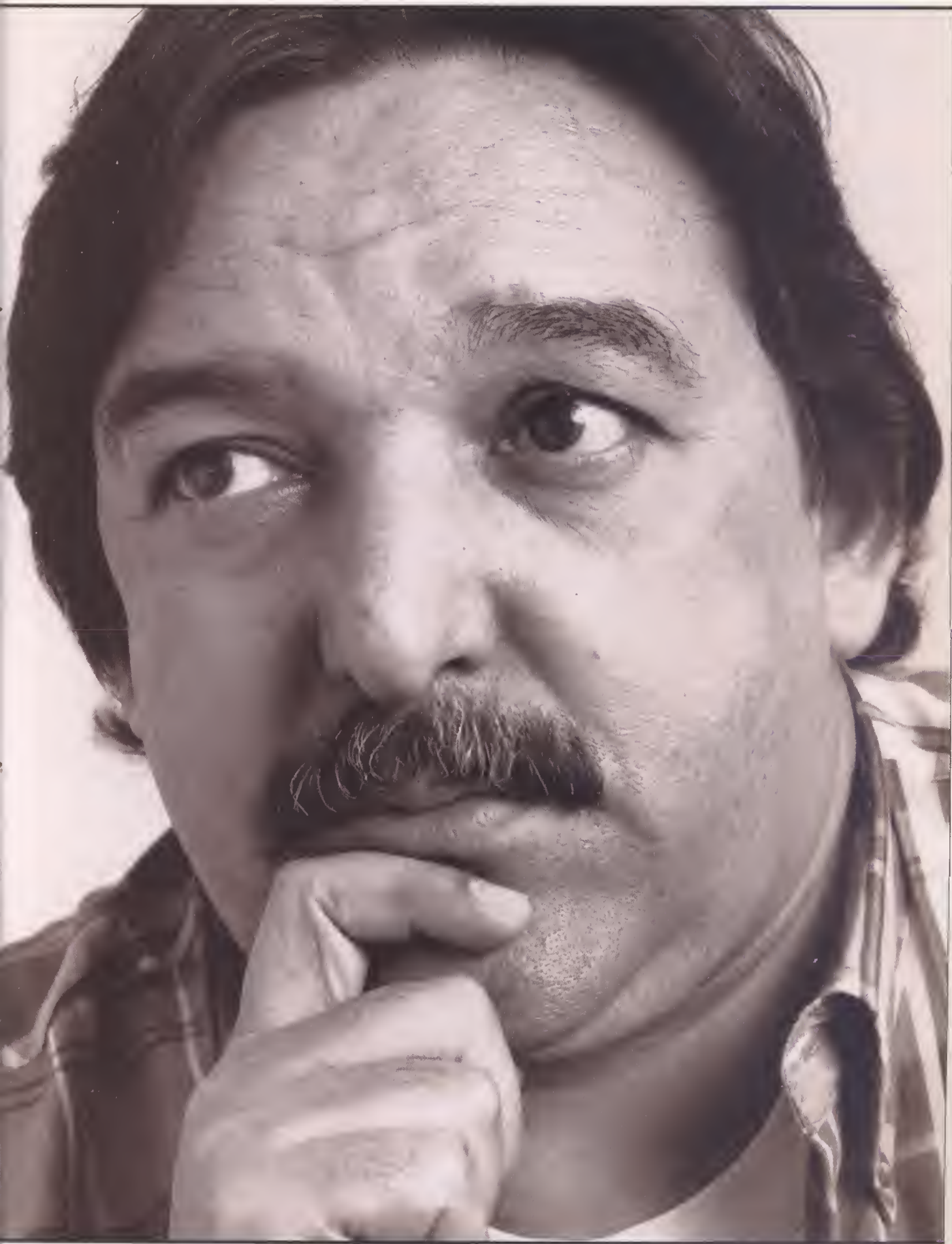
He's a big man, heavysset, with a fleshy face, long black hair, and the build of an aging linebacker. He sports a bristly mustache flecked with specks of gray. His voice is soothing yet forceful. It

rises and swells and laps into the corners of the room.

The house where SWOP is located sits on a street that angles between downtown and a neighborhood of modest-income houses. SWOP functions on many levels, but it might best be described as a watchdog agency dedicated not only to bettering the economic prospects of minorities, but to making sure that the environment in which minorities live and work remains healthy. "Industry likes to locate in poor neighborhoods where the taxes are low and the people are willing to put up with pollution in return for jobs," Moore says. "That kind of economic blackmail isn't possible anymore. We won't put up with it."

Moore knows about being poor. He grew up in a housing project in Harrisburg, Pennsylvania, the son of an Anglo mother and Puerto Rican father.

Photo: JC Leacock



Times were hard and the streets were bitter; poverty and powerlessness were the twin constants of his youth. He ran with street gangs, took drugs, rumbled with other gangs and dropped out of high school.

In the mid-1960s he came to New Mexico as a VISTA volunteer to work with gangs in Santa Fe. He moved to Albuquerque, dallied with the idea of joining the priesthood, worked with other gangs, burned out on that, then became a founding member of a local Chicano activist group called the Black Berets.

The late 1960s and early 1970s were a time of confrontation. During a riot in Roosevelt Park in Albuquerque in June 1970, while Moore and other Black Berets tried to calm things down between police and protestors, they were shot at and nearly killed. The memory of that moment remains indelibly impressed upon his mind. "Fear does funny things to the taste in your mouth," he says. "When the police pointed their guns at us, my whole chemistry changed. And then the bullets started hitting the trees, and I ran."

As the 1970s progressed, the number of confrontations in Albuquerque diminished as both the power establishment and those on the outs made adjustments and compromises. Moore kept busy organizing alternative culture centers and free health and dental clinics. He worked as a paralegal and had a hand in producing pamphlets, murals and coloring books for children that promoted positive images of Chicano history. "Don't call us Hispanics," he says. "That suggests the conquistadors. Latino is okay. Chicano is better. It not only refers to race, but to political awareness and commitment."

SWOP was founded in 1980 after Reagan dismantled VISTA and funding for community projects dwindled to a trickle. Hardly a propitious time to establish an organization devoted to minority rights, but Moore and the other cofounders operated on the premise that ultimately, no matter how hostile the climate, SWOP would sink or swim according to the solidarity and enthusiasm of its constituency.

In those difficult early days, Moore traveled all over New Mexico offering technical assistance to grassroots groups protesting everything from police injustice to environmental pollution. From the beginning SWOP avoided state and federal grants because of the strings attached. Today, as the principal fundraiser of the organization, Moore tries to tap into as many sources as possi-

ble; membership dues and private foundations have been helpful. The most generous donors have been religious organizations, particularly the United Methodist Church. SWOP staffers are paid in stipends rather than salaries. Until 1987 all work done by anyone in the organization was on a volunteer basis. "Obviously we're not in this for the money," Moore remarks with a grin.

SWOP first bared its political teeth in Albuquerque in 1984 when it staged two successful voter registration drives. "We didn't know anything about signing people up," Moore recalls. "We just went out and did it."

In the low-income South Broadway area, 500 potential voters were targeted. A thousand were eventually registered. Later that year, emboldened by their success, SWOP hit the streets to garner 10,000 new voters and ended up registering a total of 19,799.

"Voter registration is a tough act," Moore admits. "Most people are downright indifferent. Others are reluctant to

elect Bruce King as Democratic governor of New Mexico. The stakes in the election were considerable—for the first time in the state's history, an incumbent governor could succeed himself. Whoever was elected in 1990 would most likely hold office until 1998.

The purpose of the meeting was to see if Ximenes and Powell could persuade King to take three hours out of his busy schedule before the November election to ride a bus with local community, religious and ethnic leaders through Chicano neighborhoods and observe firsthand the impact of military, agricultural and industrial pollution on the people who live there.

In a velvety baritone, warming to the subject, Moore delivered the SWOP brief on the forthcoming election. SWOP wants to be part of the process, he said. SWOP wants to be on the ground floor of the decision-making apparatus of the Bruce King administration. SWOP wants to have a say, for example, in who King appoints as head of the all-powerful New Mexico

Environmental Improvement Division (NMEID), an agency whose actions have a decided impact upon many of SWOP's constituents.

Moore spoke with impressive cogency. He smiled engagingly, furrowed his brow, widened his eyes. He described arcs and circles through the air with his hands, and pressed both palms out flat as if against the surface of an invisible wall.

Not once did he level a finger at either Ximenes or Powell. Not once did he raise his voice. All during the presentation and for the duration of the half-hour meeting, he maintained steady eye contact with his listeners. It was a bravura performance.

Not that Powell or Ximenes could promise anything concrete. Both men were politicians to the core, polite and noncommittal, quick with the reassuring buzzword. King's schedule between mid-September and election day was hectic. However, they could personally guarantee that, if elected, King would take the bus tour before being inaugurated in January.

If Moore was disappointed, it didn't register on his face. With impeccable timing, he recapped SWOP's requests, adding, without a change of tone but just enough emphasis, a gentle reminder of SWOP's ability to deliver the vote in certain precincts.

Powell and Ximenes nodded. The race between their candidate and the Republican was predicted to be close. Every vote would count. With its successful registration campaigns, SWOP

Moore's grievances: The major environmental groups frequently pursue agendas that emphasize the welfare of animals and natural features over that of indigenous peoples.

register 'cause they don't want to be called up for jury duty."

He presses the tips of his fingers meditatively together. "But that's the challenge. One of our hardest jobs is to convince people to do what they don't want to do. The fact is, if they want recognition, they have to organize. The power structure pays absolutely no attention to minority individuals. If a person wants power, he or she has to join with others who want the same thing. An organization like SWOP is built from the ground up, not the top down. The process is slow. It's tedious. You have to do it person by person, house by house, street by street."

His jowly face is intent now, and focused. Organizing is his lifeblood: reaching out, making contact, galvanizing dormant energies.

Moore's gift for making an impression where it counts was amply demonstrated one morning in mid-September 1990 when he met with Vicente Ximenes and Ray Powell, Sr., chief strategists of the committee to

had demonstrated genuine political muscle. It had a loyal constituency.

"That's why I wanted to make the pitch in person," Moore said on the way back to SWOP headquarters. "If Bruce King gets in, SWOP wants to play a role in his administration. We don't want to be an afterthought. We're tired of patronage and paternalism. We don't want to be tossed a few scraps. We want to be involved in the process."

Process. That word again. It's practically Richard Moore's mantra. Over and over in his conversation, it appears. Despite his revolutionary ideals, his early experiences in the streets, his radical activism, even during the most trying times, Moore has never lost faith in the process.

Bruce King was elected governor, but he didn't take the bus tour through Chicano neighborhoods. However, since taking office, he has recommended that NMEID be elevated to cabinet status, and he has nominated a Chicana to head the post. In the meantime, a man SWOP can trust has been appointed Bruce King's liaison to NMEID. Moore is pleased with these developments.

For Moore, sparring with Powell and Ximenes is like grazing on sweet clover. It's the stuff of politics, the give-and-take, the fodder that feeds the dialectical process. Sparring with environmentalists—white, middle-class environmentalists—is something else.

After meeting with a woman from a leading conservation organization one afternoon, Moore was visibly upset. "They always talk down to us," he grumbled. "They always think they know how we should run our organization."

A sensitive nerve had been touched. Evidently the woman had been dogmatic and opinionated. SWOP, she declared, was a little fish in a big pond. By the very nature of its minority orientation, the group was incapable of dealing with complex environmental issues.

The remark didn't sit well with Moore. Under his seemingly unflappable facade, he was fuming.

That little contretemps underscored the uneasy relationship between SWOP and the so-called Group of Ten—Sierra Club, National Audubon Society, National Wildlife Federation, Environmental Defense Fund, Natural Resources Defense Council, Friends of the Earth, Izaak Walton League, National Parks and Conservation Association, The Wilderness Society, Sierra Club Legal Defense Fund—in short, the major environmental organizations in the US. In March 1990,

SWOP initiated a letter signed by over a hundred activist groups to Jay Hair, president of the National Wildlife Federation (NWF), accusing it and the other environmental groups of racism and discrimination. Not only is the management of these organizations devoid of qualified people of color, the letter declared, but their policies are inimical to the social and economic welfare of minorities.

This last issue is particularly touchy. Moore's face grew solemn as he ticked off the grievances. The major environmental groups frequently pursue agendas that emphasize the welfare of animals and natural features over that of indigenous peoples. A case in point is the opposition by the National Audubon Society and the National Wildlife Federation to sheep grazing on the Humphries and Sargent wildlife areas in northern New Mexico, a highly successful community economic development project run by Chicanos. Another case in point is the annexation of ancestral lands belonging to the Acoma Pueblo to form El Malpais National Monument in New Mexico. Groups like The Wilderness Society and Sierra Club supported the bill in complete disregard of the cultural heritage of the Acoma people.

"Let's get something straight here," says Moore. "We're not against industry. Our people need the jobs that industry provides. What we're against is dirty industry. We think industry ought to be accountable to the people who serve it. By the same token, we think the big environmental groups ought to be more accountable for the human consequences of the anti-industrial policies they advocate."

Accountability. Next to "process" and "self-worth," it's the most cherished word in Moore's vocabulary.

For years minority neighborhoods in Albuquerque and the Southwest have been victimized by a kind of economic blackmail. In exchange for the promise of jobs, industries have set up shop in impoverished regions where political representation is lax and where regulations governing the disposal of waste products are easily circumvented. It's an old scam, and an effective one. People without clout don't know how to marshal their anger in a productive fashion. To correct this drift, to give it a proper mooring, SWOP has drawn up an environmental bill of rights for minority communities that includes "the right to say NO to industries that we feel will be polluters and disrupt our lifestyles and traditions."

This proviso is at the heart of SWOP's activist philosophy. The cause, as Moore elaborates, involves more than just the



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health of whales and trees, important as they are. "We perceive environmental issues as racial and social issues," he declares. "People of color have always been concerned with the environment. For generations we've had to suffer the consequences from the industries that made other people rich. Today, we say enough of that. Where our people live and work, the healthfulness of their environment, is as important as the salary scale of their jobs."

Moore speaks about this subject from his firsthand experience. He lives in Mountainview, a few miles south of Albuquerque, with his wife and children. The community, almost exclusively Chicano, is plagued with environmental problems. To the east, along the slope that rises toward the Sandia Mountains, sits Kirtland Air Force Base. Nitroglycerines from warheads and weapons stored at the base have leached into the water table, fouling the community's drinking system.

Also located in Mountainview is the Albuquerque municipal sewage plant, the metropolitan landfill and several chemical and oil storage facilities. Piles of wet earth, containing tons of ground-up animal parts, rise from the property of a dog food company. There's a pig farm nearby and a chicken farm. In hot weather, the stench from these facilities reaches unbearable levels.

"We are surrounded by shit," says Moore. "How would you like to live like that?"

The letter to the National Wildlife Federation caused quite a stir. *The New York Times* did a story. A few feathers were ruffled. Some SWOP funding was put in jeopardy by the action. But the point had to be made. The milky complexion of the environmental movement threatens to limit its focus to a single-dimension Bambi perspective. Moore insists the problem is more complicated than that.

"It boils down to different viewpoints," he says. "We emphasize people rather than wildlife. We believe people of color are themselves an endangered species. We see the current environmental enthusiasm in the US as mainly a white middle-class movement. Consistently, in both its attitudes and institutions, that movement has shown an insensitivity to minority problems. We view the environment primarily as an arena for social justice. Grant us decent work and living conditions, and we'll pour our energies into the fate of animals and plants. We want them to

survive just as much as anyone else. We want everything to survive for the good of the entire earth, not just our little portion of it or yours."

Moore knew he was taking a risk when he helped draft the first letter to Jay Hair of the NWF. But what they perceive to be the truth has always been more important to the members of SWOP than political expediency. A brief two months later, in May 1990, they sent a second letter to such organizations as Greenpeace, the National Toxics Campaign and the Southwest Research and Information Center, taking them to task for their hiring policies. Included in the letter was an item that Moore feels marks one of the most promising developments in SWOP's history.

In April 1990, SWOP sponsored the first People of Color Regional Activist Dialogue for Environmental Justice, a gathering of third world political activists from eight southwestern states. The purpose of the conference was to publicize the fact

"We perceive environmental issues as racial and social issues," Moore declares. "People of color have always been concerned with the environment. For generations we've had to suffer the consequences from the industries that made other people rich."

that environmental issues rightfully belong within a broad context of social and racial problems, against which minority people have struggled for centuries.

So successful was the conference that a second was held in Albuquerque in September 1990. An important link between regional activists ranging from San Francisco to San Antonio has thus been forged. By pooling their resources and presenting a united front, more effective pressure can be brought to bear upon the four major sources of environmental pollution: military, agriculture, industry and municipalities.

Moore is also pleased with the audacity that SWOP has exhibited in calling attention to the issue of the racial imbalance of the leading conservation organizations. Since the letters appeared, a number of staff people from these groups have called the SWOP office and offered their congratulations. One or two groups are in the process of taking long, hard looks at their hiring practices. The majority, however, have shrugged off the accu-

sations. Against these behemoths, in size and influence, SWOP is like a David with a slingshot; its annual budget is \$300,000. By contrast the National Wildlife Federation's is \$60 million. Some \$40 million of that amount is donated by such mega-corporations as Arco, British Petroleum, GTE, General Electric and Exxon. "To say the least," growls Moore, "the influx of this kind of cash can't help but influence priorities."

Not only are the big outfits racist, says Moore, "they have become the very enemy they originally set out to fight." Take, for example, debt-for-nature swaps in third world countries. Groups such as National Wildlife Federation are currently involved in persuading developing nations to sign over lands to creditors in exchange for forfeiting a portion of that nation's debt. In other cases, the debt is purchased outright by wealthy environmental groups at reduced rates, thus enabling the new creditors to write off the expense. This not only raises the specter of conservation groups becoming bona fide creditors to third world countries, it perpetuates the long and unhappy expropriation of third world resources.

Moore's hands flutter over his desk with a fluid, conjuring motion, as if seeking to bring order to the clutter that reigns there.

"Environmentalists don't have to worry about us challenging their power. SWOP's agenda is different, and always has been. Before we start dialoguing with them

over anything, we first need to discuss treaties, water rights and land grants. Our priorities have to be dealt with first. People of color can't afford the luxury of saving plants and animals at the expense of their own lives. That may sound harsh, but it's the truth. Whether it's a rainforest in Brazil or grazing land in Nevada, our habitat is not a recreational playground. It's where we live and work. It's where our children play and our elders are buried. It's our land and our culture."

For all his love of palaver, biographical details are difficult to elicit from Richard Moore. His conversation deals almost exclusively with issues, ideas and strategies.

Part of the reason for this reticence lies in his genuine group orientation. As coordinator of SWOP, he shares leadership and responsibility with several others. "We're all that way in this organization," he insists. "We play down individualism

and emphasize collectivism. The 'I' is not important in our work. SWOP belongs to many different people, not just to Richard Moore. Invariably, in this business, when people forget 'We' and focus on 'I,' serious trouble results."


The common enemy that keeps SWOP's leadership focused is the familiar double-faced monster of racism and apathy. Racism on the part of the political bureaucracy, apathy on the part of the minority victims. This apathy can be crippling. To overcome it takes a constant effort of courage and perseverance. There's nothing easy about being a Chicano, even in this desert land where Chicanos have lived for hundreds of years. That is the given. Life is a struggle for these people from the moment they draw their first breath.

"We don't believe in apathy here at SWOP," says Moore. "We believe that lack of organization is responsible for apathy. The payoff comes when you see people empowered for the first time. Few things are more satisfying than watching an outcast people acquire a sense of self-worth through the political process."

Self-worth. Again the operative term here.

"There are two keys necessary to successful organizing," Moore declares. "Never do anything for anybody that they can do for themselves. And never ask anybody to do anything that you won't do yourself. The purpose of any support system is to make people proud of who they are. We've done that, and we'll continue to do that. We are a proud people. We are a good people. We are an industrious people. That's the message we need to broadcast to the power brokers who run this country. We will not compromise our rights as human beings. We will not permit our land to be polluted so they can make a profit."

He looks down at his hands. Clasps and unclasps them, as if mulling over their form and function. They are big hands, muscular, capable of shaping delicate motions. Like his voice, they are eloquent without being flashy, efficient without being aggressive.

"The lesson is simple," he concludes. "It really is." He tightens one hand into a knot and holds it up. "It takes all these fingers to make a solid fist." 

Conger Beasley is an author and writer based in Kansas City, Missouri.

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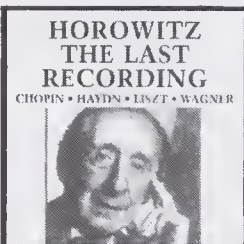
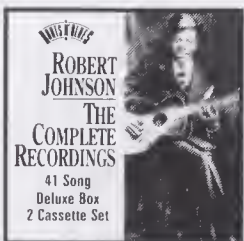
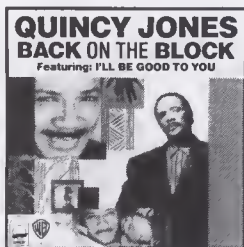
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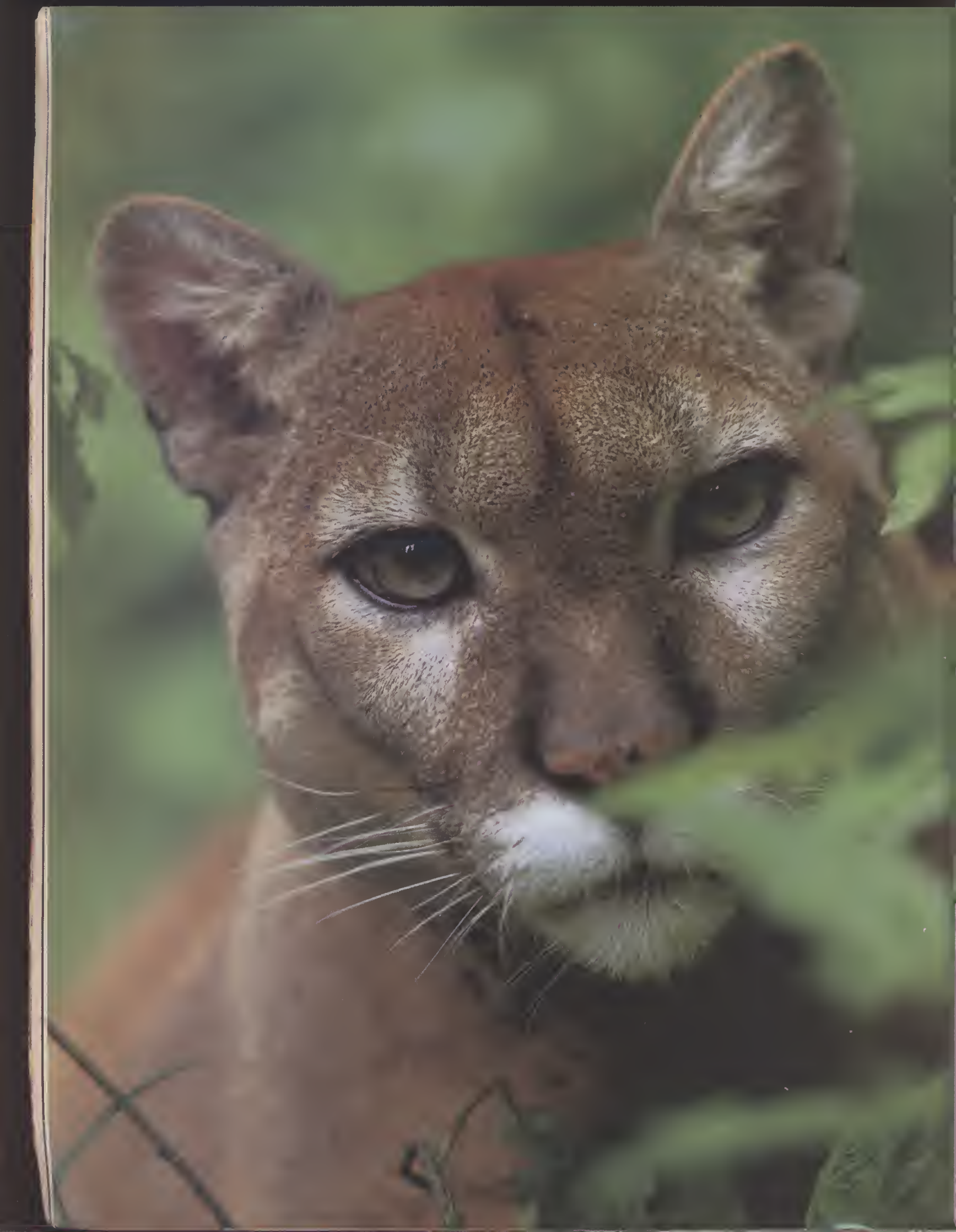
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OF PANTHERS & PREJUDICE

Will the bureaucracy of environmentalism and an overtapped gene pool spell the demise of the last of the Florida Panthers?

— BY CHRIS BOLGIANO —

THE FIGURINE IS OF WOOD, FINE GRAINED and hard and dark from at least five centuries of burial in the muck of southwestern Florida. The small head with large round eyes and delicate nostrils, the sinuous line of the limbs, belong unmistakably to the panther, yet the animal sits on its haunches in a human posture. Unlike the Underwater Panther, a monster of mixed panther, rattlesnake and other animal parts who emerged from water to battle with beings of the upper world, the wooden statue is graceful and appealing, almost supplicating. So integral was the panther in the life of southeastern Native Americans, anthropologists believe, that imagery of the animal embraced both the terror and the beauty of the cat's rippling power.

During their passing tenures, the Spanish, French and English all encountered what they called lions, leopards, ounces (a type of leopard, probably the snow leopard) and tigers. Most tried to kill them on sight. Americans upheld the tradition. In 1896, when scientist

Arguments rage over how to build Florida panther populations—with active intervention of science or by letting them go their own way.

and hunter Charles Cory described the small feet, dark red-brown color and white flecking around the neck that established the Florida panther as the cougar subspecies *Felis concolor coryi*, the animal was "not uncommon in the unsettled portions of the state." By 1946, when Stanley Young and Edward Goldman published their classic compilation, *The Puma, Mysterious American Cat*, the Florida panther's former range from South Carolina to eastern Texas had been reduced to isolated parts of southern Florida.

To its credit, Florida became, in 1950, one of the first states to extend any protection at all to the animal known in various regions as panther, cougar, mountain lion and puma—everywhere cursed as varmint. Federal protection of the Florida panther came in 1973 under the Endangered Species Act. A cooperative state and federal recovery effort began to get serious in the early 1980s. It is now desperate. A handful of people are focusing all the professional commitment and personal passion that scientific objectivity will allow on a few disease-ridden, parasitized, incestuous families of panthers squeezed between the westward clutch of Miami and the eager eastward grasp of Naples.

From 3,000 feet in the air, the land east of Naples, Florida looks like a geometric puzzle. Rectangles, squares and trapezoids are limned by drainage canals and roads. Then hard-edged shapes soften into the circles formed by cypress domes, and straight lines begin to wander between islands of trees and expanses of prairies. Forest canopy thickens to the east; when the plane tilts, the sheen of water reveals it as the type of wooded swamp called a strand. At a hand signal from the state biologist listening intently to earphones, the pilot tipped onto a wing, cut the motor and spiraled down to circle at 500 feet. Directly below, hidden beneath red maple leaves in the Fakahatchee Strand, dozed one of the 21 radio-collared panthers that are monitored by plane several times a week, year in and year out. The biologist plotted a point on the map, the plane rose, and the searching and spiraling continued.

Since radio telemetry began on panthers in 1981, a secret life of roaming has been exposed. Biologists now know that adult males will range up to 400 square miles in the wettest and, for panthers, poorest habitats of the Everglades and Big Cypress Swamp. It is the slightly higher and drier country, biologists have learned, where sparse, stately pines



give the landscape the ambience of an African savanna, or where tangled islands of oaks and other hardwoods punctuate the broad sweep of prairies, that will grow more deer and therefore more panthers. The fattest, healthiest panthers live on private lands west and south of Lake Okeechobee. This is the best ranch land around. Panther researchers, who might confirm the presence of an endangered species that needs large expanses of undeveloped habitat, are not allowed in.

Biologists know that when they themselves are sweating through a 103-degree day, the panther they're after may be buried beneath head-high saw palmetto, where it's a cool 77 degrees. Dave Maehr works in Naples as director of panther research in southern Florida for the state Game and Fresh Water Fish Commission. While he's out measuring the air temperature in the place where a panther has just been, the panther is "out scouting for another day bed," says Maehr. His very blue eyes and sandy brown hair could belong to a surfer. Since 1985 Maehr has been responsible for gathering field data on the panther. Days in the field are spent splashing behind cougar hounds until a panther is treed. The panther is then darted with tranquilizer, a process much improved since the man who held Maehr's job in 1983 sent his career plummeting by fatally overdosing a panther. (There has been one additional research-related loss of a panther since then.) A field workup on every panther includes, but is not limited to, nasal, rectal, vaginal, oral, aural and skin samples for medical and genetic tests, electroejaculation of males for the frozen sperm bank and various vaccinations.

"I would estimate the disturbance of our work on panthers at nil, absolutely nil," Maehr maintains. "They might get walked in on once a month on the average, and the knowledge we gain from that is crucial." What does worry Maehr is the months-long disturbance known as hunting season. Maehr's studies show that consumption of deer by human predators does not reduce the panther's main dietary staple; the herds rebound. But when deer and hog hunters enter the woods, panthers move out. In addition to disturbance from hunters there is also illegal harassment: Poaching is the second leading cause of death for Florida panthers, after road kills.

There are people who say there is no such thing as a pure Florida panther anymore. Frank Weed is one of them. Weed makes a living on exotic cats; he breeds and sells them, and makes them perform for photographers. Many of the leopard, black leopard and

Biologists tree Florida panthers and dart them with tranquilizers. The panthers are then fit with radio collars for tracking and monitoring to learn all they can about the elusive animals.

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cent, enormous and perfectly round. The eyes of Tracker, who 11 years ago was a kitten in Frank Weed's bathtub, were fixed on Jim McMullen, who had raised her. He entered her cage to give her a frozen whole chicken. In 1984 McMullen published *Cry of the Panther*, an eerie story of obsession and symbol in the Florida swamps. McMullen wanted to be a wild panther, and he tried everything, from soaking himself in cougar urine to eating panther kills, to find "affinity." After many months of tracking he did find it by gazing into the eyes of a wild panther. He also worked to make the panther the Florida state animal in 1982, a cachet that has proved its worth in generating all important public sympathy.

McMullen taught survival school for a while, and looks powerful despite a paunch. Even on a relaxed Saturday afternoon he wore a large knife on each hip. Tracker is the draw for presentations McMullen gives for a fee about the Florida panther. She chirped at him while he leaned against her cage and talked about panther recovery. "OK, OK," he answered, testing with a knife the chicken's state of thaw.

For years, McMullen has been a vocal critic of the intrusive aspects of panther recovery work. He opposes the plan now being implemented by the US Fish and Wildlife Service to remove cats from the wild for captive breeding. Of the more than 300 public responses to the plan received by the service, most agreed with McMullen and a lawsuit resulted.

Occasionally the jargon of science includes a term so elegantly succinct and ex-

Photo: Dave Machir/Florida Game & Fresh Water Fish Commission



Researchers with an anesthetized panther. The 21 panthers currently collared have regular field workups done that check nasal, rectal, vaginal, oral, aural and skin samples for medical and genetic tests.

It's ironic that Melody Roelke, who has been the state of Florida's panther veterinarian since 1983 and who says she has aimed her career at working with free, wild animals, now finds herself a leading proponent of captive breeding. Roelke is a strong, stocky woman with deep-set eyes and a taste for coffee and melancholy folk music. Earlier in her career Roelke contributed to the pioneering genetic work on cheetahs featured in *Scientific American* and *Science*; the framed covers of those issues, with their somber cheetah faces, hang on her wall. It was Roelke's comparative analysis of western cougar and Florida panther genes that revealed the ominous lack of diversity in the cats isolated in southern Florida for many generations. And it was Roelke, working with Stephen O'Brien of the National Cancer Institute in Maryland, who ended the rumors and suspicions by proving that at least some Florida panthers are hybrids.

Using methods of mitochondrial DNA analysis perfected only in the last few years,

O'Brien showed conclusively that the maternal ancestor from the Americas. Most of the Big cats showed none of the factors, but if they mate with domestic cats, they too will become

Florida panther genes is not of aesthetics. The US Fish and Wildlife Service has traditionally interpreted the Endangered Species Act to exclude protection any hybrids protect subspecies. Knowledge of genetic technology unknown to the service was written has there-of administrative abilities to the Department of the Interior to tag all wild panthers in Florida and pledged not to weaken the program. The same taxonomic applies to red wolves, gray wolves, protected species suspected of cross breeding, and may eventually require a rewrite of the Endangered Species Act.

Roelke remarked that the hybridization she documented "probably was good for panthers in the long run." Litigants against the captive breeding plan apparently concurred. As part of a settlement that was finalized in February, the US Fish and Wildlife Service agreed to examine the impacts of genetic enrichment from other subspecies. This does not mean that cougars won't again be dumped, willy-nilly, into Florida panther habitat. In late 1988 Roelke was the anesthesiologist on an all-women surgical team that collected 141 eggs from eight cougars for the

first in vitro fertilization of a large cat. No litters matured from that experiment, but other researchers have produced the first test tube tiger, now nearly a year old. Test tube panthers, created from deliberated selected eggs and sperm, are merely a matter of time.

The captive breeding plan relies on such sophisticated techniques to achieve a stud-book-managed zoo population of several hundred panthers within 20 years and another couple hundred in the wild. Unlike the red wolf, blackfooted ferret and California condor captive breeding projects, which removed the entire known population from the wild, only individual panthers are identified for capture. In this first year of the plan, up to six kittens will be taken.

Endless questions about the fate of the remaining wild panthers and the contradictions inherent in raising captive wild animals are fueling endless arguments in and out of committee meetings. Yet beneath the divisive clashes of professional perspectives, personalities and

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Biologists tree Florida panthers and dart them with tranquilizers. The panthers are then fit with radio collars for tracking and monitoring to learn all they can about the elusive animals.

Photo: Helen Longest-Slaughter/Nature Images, Inc.

cougar pictures in magazines were snapped through a hole in a protected wire enclosure in a large, naturalized cat run on Weed's property. Weed teases the cats across with a feather on a string, or prods them with a stick. "Cougars are the most affectionate of the big cats," he said. Some of them, like Morris, a large male, Weed can pet. Morris's response was an unmistakable miaow.

Although Frank Weed does not claim to have released new blood into the native panther population, he says he knows people who have. There have been documented releases of captive cougars into the Everglades, not to mention the near certainty of undocumented releases of the couple of thousand captive cougars in Florida. Weed always has a waiting list of customers for the cats he breeds, and when visitors come he takes pleasure in showing off the spotted, mewling, still blind cougar kittens he occasionally has under a heat lamp in his bathtub.

The eyes of a grown cougar are pale gray and shimmering yellow, translucent, enormous and perfectly round. The eyes of Tracker, who 11 years ago was a kitten in Frank Weed's bathtub, were fixed on Jim McMullen, who had raised her. He entered her cage to give her a frozen whole chicken. In 1984 McMullen published *Cry of the Panther*, an eerie story of obsession and symbol in the Florida swamps. McMullen wanted to be a wild panther, and he tried everything, from soaking himself in cougar urine to eating panther kills, to find "affinity." After many months of tracking he did find it by gazing into the eyes of a wild panther. He also worked to make the panther the Florida state animal in 1982, a cachet that has proved its worth in generating all important public sympathy.

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Occasionally the jargon of science includes a term so elegantly succinct and ex-

pressive that no lay phrase can substitute. "Extinction vortex" is an example. The image of panthers being sucked helplessly into a whirlpool of genetic debilitation that will ultimately drown them is quite accurate. The statistical models, after tumbling all the data ever compiled about the panther into various configurations, predict extinction within 25 to 40 years if panthers are left on their own. There are already many manifestations of genetic decline. The 30 to 50 Florida panthers most believe to be alive today are simply too few to keep genes vigorous and adaptive. Most conservation biologists believe at least several hundred breeding animals are necessary. If the recovery plan is to achieve its goal of three self-sustaining panther populations—if even the one current population in southern Florida is to continue to exist—there appears to be no other recourse than to remove some from the wild for immediate selective breeding in captivity.

Roelke and O'Brien showed conclusively that the population of cats in the Everglades had at least one maternal ancestor from Central or South America. Most of the Big Cypress population showed none of the foreign gene indicators, but if they mate with the Everglades cats, they too will become hybridized.

The purity of Florida panther genes is not simply a matter of aesthetics. The US Fish and Wildlife Service has traditionally interpreted the Endangered Species Act to exempt from federal protection any hybrids produced by distinct subspecies. Knowledge uncovered by genetic technology unknown when the legislation was written has therefore raced ahead of administrative abilities to cope with it. The Department of the Interior reacted by defining all wild panthers in Florida as protected, and pledged not to weaken the recovery program. The same taxonomic issue, however, applies to red wolves, gray wolves and other protected species suspected

of cross breeding, and may eventually require a rewrite of the Endangered Species Act.

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Photo: Dave Machri/Florida Game & Fresh Water Fish Commission



Researchers with an anesthetized panther. The 21 panthers currently collared have regular field workups done that check nasal, rectal, vaginal, oral, aural and skin samples for medical and genetic tests.

It's ironic that Melody Roelke, who has been the state of Florida's panther veterinarian since 1983 and who says she has aimed her career at working with free, wild animals, now finds herself a leading proponent of captive breeding. Roelke is a strong, stocky woman with deep-set eyes and a taste for coffee and melancholy folk music. Earlier in her career Roelke contributed to the pioneering genetic work on cheetahs featured in *Scientific American* and *Science*; the framed covers of those issues, with their somber cheetah faces, hang on her wall. It was Roelke's comparative analysis of western cougar and Florida panther genes that revealed the ominous lack of diversity in the cats isolated in southern Florida for many generations. And it was Roelke, working with Stephen O'Brien of the National Cancer Institute in Maryland, who ended the rumors and suspicions by proving that at least some Florida panthers are hybrids.

Using methods of mitochondrial DNA analysis perfected only in the last few years,

gender, runs a thread of absolute agreement on a single unifying theme: the ultimate question of where will wild panthers live?

It's hard to distinguish between the monotonous rows of pines on paper company lands and the same piney monotony on the Osceola National Forest, near the Florida-Georgia border. Trees march like soldiers through plantations burned frequently enough to keep the saw palmettos below the knee. Still, seven cougars captured in western Texas and released here in June 1988, managed to find enough wild hardwood swamps with tangled cover and plentiful deer to make themselves at home for a short while. As an experiment to determine whether panther habitat existed outside of south Florida, reintroduction was quite successful. The cougars established overlapping territories, killed deer and wild hogs regularly, and began to develop a social structure.

Then hunting season drew near. One cougar was already dead, probably from poison; two more were shot. The remaining cougars began to wander: One climbed a tree in a Jacksonville backyard, two others threatened livestock. All were recaptured earlier than planned. "Our problem is not just the small percentage of hunters that poach, but the overall disturbance from the sheer number of hunters in the woods," said Chris Belden, the Florida Game and Fresh Water Fish Commission official in charge of reintroduction. His options for dealing with hunters are limited. To woo sportsmen's lobbies afraid that panthers would commandeer the woods away from them, the state commission promised not to restrict hunting in any way on behalf of the panther. "The only thing I can think of," Belden said, "is to introduce a lot more cats so that a widespread social web would hold them in their own territories. Then we could replace individual cougars with Florida panthers as they become available through captive breeding."

Bearded and black-haired, a color nearly matching the wild boar's head mounted behind him in his Gainesville office, Belden smiled tightly. He has one of the longest tenures of any bureaucrat involved with Florida panthers, dating from the mid-1970s, when he completed hog studies in the Smokies. In that time he has felt some very high highs and very low lows. This is a low. The commission has ignored his recommendation for reintroducing greater numbers of cougars. He sees public sentiment for reintroduction withering from lack of momentum. And he worries what will happen even if cats are reintroduced.

"The first time a cat attacks somebody's child it will all blow up. Have you ever seen a cougar when a child walks by its cage? There's something about prey size," Belden said. No panther attacks on humans have ever been documented in Florida, and such attacks are highly unusual anywhere, but in recent decades several have occurred in the western United States, mostly involving children.

It was not the imminence of death for either humans or panthers that finally brought a note of fatalism to Belden's soft Appalachian drawl. "We're losing panther habitat everyday. Who's addressing that? Nobody. Nobody knows how."

In another Gainesville office, Dennis Jordan fussed with stacks of papers on his desk. Jordan has been the Florida Panther Recovery Coordinator, a US Fish and Wildlife Service position, since 1987. For the previous 24 years he worked for the service throughout the southeast; a southern accent lends his bureaucratic blandishments a certain charm. "We fully understand that less and less private land

and that's about what it would take to accommodate a truly self-sustaining panther population. There are hopes that one or two populations could be situated in other parts of the Florida panther's historic range, but nowhere is there enough public land for panthers to live freely. Unless the hearts and minds and wallets of private landowners are won for the Florida panther, it will exist—if it survives at all—only as a managed object. Small enclaves of panthers on public lands, hauled in by radio collar if they set foot over the line, would be mixed and matched with zoo animals to maintain a healthy metapopulation. The eventual scenario would be a version of *The Handmaid's Tale* from the panther's point of view: Non-endangered western female cougars would be implanted with designer Florida panther embryos, released to bear the young in the wild, then recaptured for repeat duty as surrogates. This engineered approximation of nature, with human tinkering in place of freedom of the wild, has become the guiding vision of the recovery effort.

Jordan outlined quite precisely what needs to be done to identify and secure the core areas and linkages that could support truly wild panthers. "Somebody is going to have to spend full time mapping out all our radio collar data and verified sign to see where panthers are, and where unoccupied good panther habitat is," he began. "Then we've got to go through county courthouse records, find out who owns those lands, and start making contacts. One of the things I've looked into a little is conservation easements. And maybe we could interest some landowners in leasing

their property to the state. There must be some landowners who love the land, and want to keep it the way it is. It's going to take some strategizing and I don't know when it's going to happen, hopefully this year we will be moving on it." The precision blurred, and trailed away.

It's hard to blame him. The job of convincing private landowners to grow panthers instead of oranges or winter homes is a daunting one. So is showing people how to accept the fact that in some extraordinary situations, panthers may threaten children. So is reconciling hunters to potential loss of their traditional privileges in areas where panthers are to live. Creating a sociological revolution is a lot to ask of people trained in biotechnical sciences.

There have been a few successes in habitat management. Because projects that receive federal money must be critiqued by the US Fish and Wildlife Service, the state road known as Alligator Alley is being made safer




Fresh lion tracks. Loss of habitat has led Florida panthers to wander from protected refuge to private land, where they face resistance by locals.

will be available to panthers in the future," Jordan said. Florida's human population has doubled since 1960; it's estimated that 1,000 people move in every day. Smoke from land clearing fires smudges the horizon. Trucks laden with rolls of sod for new yards always seem to be blocking the road. The citrus industry is moving south after years of frosts in north-central Florida; square miles of orange trees in rows with mowed grass between them offer nothing to panthers. And even in protected habitat, the mysterious emergence of mercury into the food chain has killed at least one panther.

Despite rising land costs, the federal government has expanded national parklands in southern Florida and established the new Florida Panther National Wildlife Refuge. The state of Florida recently legislated one of the most aggressive public land acquisition programs in the country, with spending slated at about \$300 million a year for ten years. But no one can buy the whole state,

for panthers during its conversion to an interstate (to be completed in 1992). Since road kills are the leading cause of panther deaths, a 10-foot chain-link fence parallel to the highway will guide wildlife to 36 underpasses at known panther crossings. On private land, when a landowner applies for a permit to drain wetlands, state agencies have some leverage in designing limits to the permit. No permits are needed to develop the uplands.

The other biologists' offices had panther range maps, panther photos and plaster casts of panther tracks, but Jordan's was further distinguished by a panther planter. This was a small, reposing ceramic figure with a few anemic plants growing from a flank. Like the wooden figurine carved by a Calusa Indian centuries ago, it has lines that suggest notions of grace and beauty. Perhaps, in an unfathomable future, anthropologists will unearth it, too, from some landfill and ponder its symbolic significance to the society that made it. By then, they'll know whether that society was content with the symbol, and let the reality die. 

Chris Bolgiano writes for numerous national magazines from her base in Virginia.

For further information about Florida panthers, contact the following organizations:

Florida Panther Coordinator

117 Newins-Ziegler Hall
University of Florida
Gainesville, FL 32611-0307
(904) 392-1861

Florida Game and Fresh Water

Fish Commission

Office of Information Services
620 S. Meridian St.
Tallahassee, FL 32399-1600

For further reading on the Florida panther, consult the following publications:

The Florida Panther Recovery Plan 1987

US Fish and Wildlife Reference Service
6011 Executive Blvd.
Rockville, MD 20852

The Florida Panther

Victoria Brook Van Meter
Published by Florida Power and Light Company,
Corporate Communications
P.O. Box 029100, Miami, FL 33102-9100

"The Florida Panther"

Jim Bob Tinsley
Great Outdoors Publishing Co., 1970
St. Petersburg, FL

Cry of the Panther: Quest of a Species

James P. McMullen
Pineapple Press, 1984.
Englewood, FL

Photo: Steve Kaufman/Peter Arnold, Inc.



THE NATURE OF THE CAT

The Florida panther, *Felis concolor coryi*, is one of 30 subspecies of the tawny, shy cat known as the American mountain lion, cougar and puma. Various subspecies of mountain lions inhabited forests, deserts, mountains and swamps throughout most of the New World before European settlement; the Florida panther probably ranged from South Carolina to the Mississippi.

Compared to western mountain lions, panthers are smaller and darker, with longer legs, smaller feet and shorter, stiffer hair. These may be adaptations to the swampy, mosquito-infested landscape and hot climate of the Deep South. The head has several distinctive features, including a broad, flat nose with arching nostrils. Mature males weigh an average of 120 pounds and measure about seven feet from nose to tip of tail. Females weigh only about 75 pounds and are six feet or less in length.

Most mountain lions prefer deer, which they kill by stalking like a house cat, springing on the back and biting in the neck with great agility and strength. A deer is needed roughly every seven days; more frequently by nursing mothers. Florida panthers also rely heavily on wild hogs descended from Spanish livestock. These hogs may be part of the reason Florida panthers survived while eastern mountain lions did not. Raccoons are also eaten regularly; alligators, armadillos, rabbits, rats, birds and even insects are eaten on occasion.

Sheep are sometimes killed by western lions, but the cattle raised in Florida are almost never touched. There has never been a documented attack on a human by a Florida panther.


A mature male Florida panther typically travels through a home range of 150 to 250 square miles, twice as large as in some western habitats that are richer in deer. Home ranges of females are closer to 70 to 90 square miles. Florida panthers, both male and female, sometimes overlap their home territories; this is not always the case with western cougars. Males mark territories by scraping dirt into a pile with their hind feet and depositing urine or feces on it. Mountain lions roam almost continuously, although after making a large kill they may stay in the area for a week. Florida panthers have traveled 20 miles in a night. Usually they travel alone, except when breeding or raising a family.

Panthers prefer the islands of hardwoods, called hammocks, that punctuate the vast wetlands of southern Florida. Forests, and particularly forest edges, offer better cover for stalking as well as more diverse food sources for both deer and panthers. Panthers can swim but would rather not. They are most active at dawn and dusk, and spend their days bedded down in the dense saw palmetto that blankets Florida uplands. Females seek dens in dense thickets to bear young.

Male mountain lions reach sexual maturity at three years old and females between two and three years; however, a few Florida panther females have given birth before reaching two years of age. Although mountain lions are known to breed throughout the year, Florida panthers tend to have kittens from April through August. Gestation time is about 95 days. Litters usually consist of one or two kittens, born spotted and blind. The spots fade during the one to two years that kittens spend with their mother. Newly independent young panthers are very vulnerable. They don't hunt well yet, must travel into strange territory to search out a home, and lack experience with the roads and rifles that are the leading causes of panther death.

Florida panthers have been genetically isolated long enough for serious debilitation to begin. They are beset by several diseases and many males have one undescended testicle, a sign of inbreeding, and a high rate of abnormal sperm. Decline continues: Recently in the Everglades, a mother had no other male to mate with but her son. Statistical models predict that under current conditions the Florida panther will become extinct within 25 to 40 years.

—CB

A large, dark, viscous liquid, likely oil, is shown in a pool. A cormorant is partially submerged, with its head and neck visible above the surface. The bird's feathers are dark and appear matted with the oil. The background is a light, hazy blue, suggesting a sky or water surface. The overall mood is somber and tragic.

An oil-soaked cormorant swims through pure oil off the Saudi coast. Thousands of birds were covered in crude when Iraqi soldiers opened the valve at Kuwait's Mina al Ahmadi oil depot, pouring millions of barrels of oil into the Persian Gulf in an act of eco-war. Cleanup and care of the birds, such as these cormorants (right), is laborious and practically futile. Five species of birds have been hit the hardest—two species of cormorants, two species of grebes and slender-billed gulls—although it is unknown what effect the oil will have on migratory birds that use the Gulf as a stopover in April and May.

Photo: L. Van der Stoep/Gamma Liaison

Death In The Gulf



Photo: Jim Lukoski/BlackStar



Photo: Royal Society for the Prevention of Cruelty to Animals



Photo: Andy Clark/Reuters-Bettmann

A BIOLOGIST'S VIEW OF THE GULF WAR

BY T.A. ROBERTS

It is as hard to assess the environmental casualties of war as it is to deal with them, and they inspire a tendency to despair and overreact—both before and after the fact—that does no one any good. In early January, prior to the war, an environmental advisor to King Hussein of Jordan warned that wide-scale ignition of oil wells would produce enough smoke to alter world climate. Probably untrue, say a couple of climatic programs in California computers. Apocalyptic predictions like this, exaggerations for effect, may make us more—not less—likely to continue environmental gambling, because they don't often happen in ways that impress themselves on the minds of the leaders who roll the dice.

Even at the war's end, hundreds of wells afire was an extremely large and messy problem. But it is a problem that will probably be solved—if for no other reason than because there is money to be made fixing it and money to be made after it's fixed. "Black rain," falling from the smoke clouds, is not plutonium; it's incompletely burned hydrocarbon, i.e. soot, something we've been living with since the beginning of the industrial revolution. Red Adair and his slow-talking Texans have moved out to extinguish the fires, and the mega-engineers of Bechtel Corp. have access to the very deep pockets of accumulated Kuwaiti wealth.

Photo: J. Scott Applewhite/AP-Wide World Photos



Photo: Royal Society for the Prevention of Cruelty to Animals

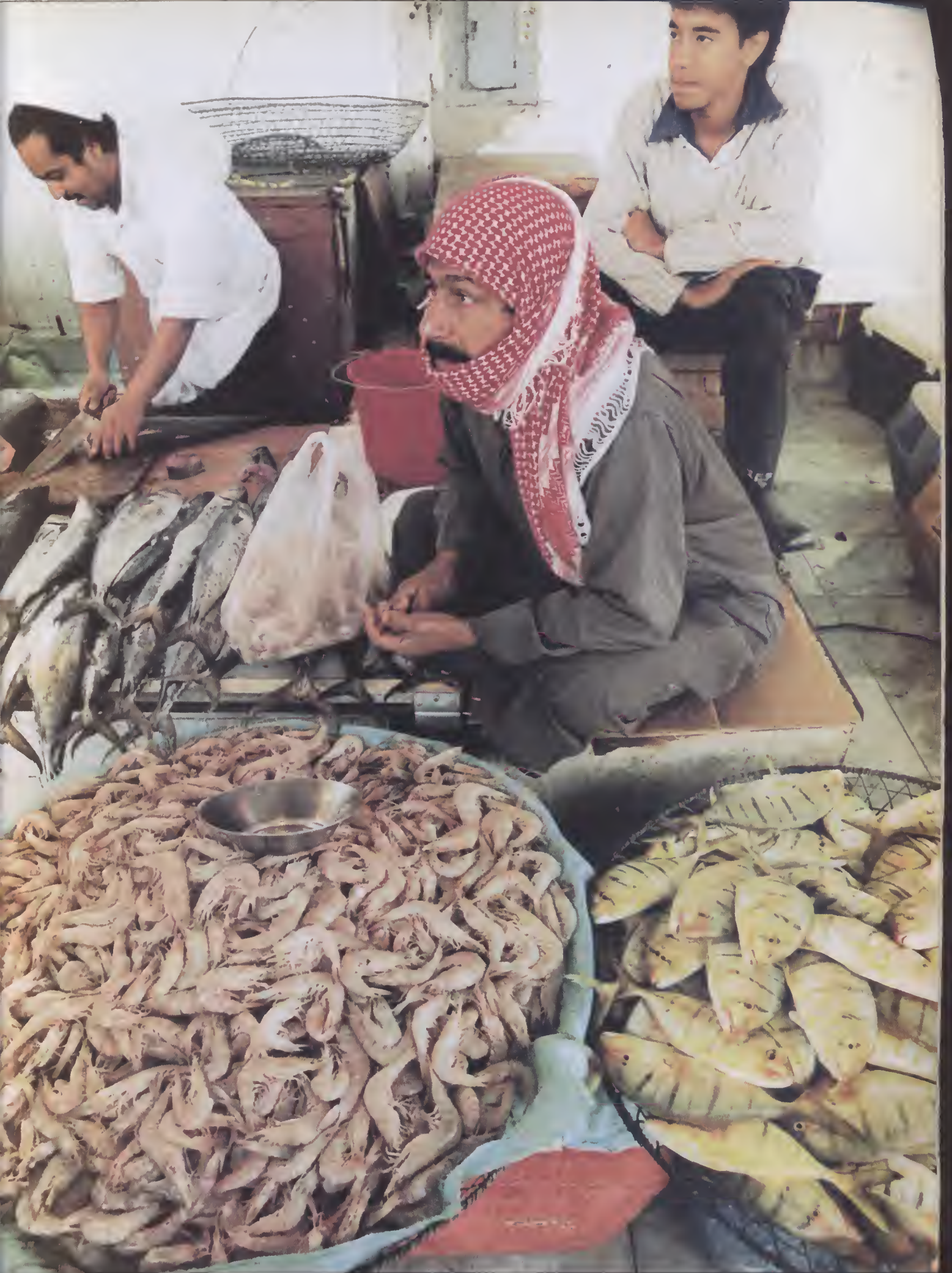


Facing an ocean of oil, a Saudi water technician prepares for traditional evening prayers. Some 11 million barrels of oil were thought to be released, although by war's end some estimates were being decreased to 1 million to 2 million barrels. Still, the release is considered four to eight times greater than the 1989 Valdez oil spill. Floating on the first two feet of water, oil is especially deadly to sealife such as turtles, dolphins and seabirds. The Saudi government said oil skimming ships have recovered as much as 200,000 barrels, but even in successful cleanups only 10 percent to 15 percent of oil spilled is typically recovered. The slick has broken into a long strip hugging the coast heading slowly south toward Bahrain and the rich, shallow marine ecosystem that yields a bounty of shrimp and fish and is the home for dugongs and sea turtles. On February 6, the last harvest of the Gulf's bounty was gathered and sold (opposite) before the massive spill decimated the Gulf shrimp industry, for what some experts believe to be as long as 10 years.

Photo: Royal Society for the Prevention of Cruelty to Animals



Photo: Peter DeJong/AP-Wide World Photos



I'm worried much more about the spill of crude into the waters of the Persian Gulf, the episode in January that was one of the war's first, and most wrenching, tragedies.

Researching a book in the early 1970s, I watched the development of the little sheikdoms below Qatar, and I spent 1988 and 1989 at the northern end of the gulf as a range ecologist for the Jordanian government. My bird guides are full of the Arabic names for the lapwings and plovers I've counted at Azraq—now a refugee camp—one of the last oases for waterfowl and shorebirds heading down the Arabian peninsula. And beyond Bahrain, I watched for dugongs, the eastern hemisphere's sea cow, relatively abundant there, but of an order (*Sirenia*) always scarce to the point of mythology. They are said to be the origin of mermaids.

That part of the world was just starting to see itself with some ecological perspective. The Arabian oryx is a massive, extravagantly-horned antelope that can live on as little water as a Mojave ground squirrel. Thirty years ago, Gulf Arabs with machine guns roamed the desert for the chance to take the last one in the wild. In the mid-1980s, the Saudi government decided they wanted them back, and the species is being reintroduced in the southeastern Arabia and in Oman, from a breeding fragment maintained at the Wild Animal Park in San Diego. The Kuwaitis had been running summer camps in pearl diving for their over-indulged youth, an activity that was part of their past and a legitimate exercise in sustained-yield harvest. The clean oceans needed for pearling were part of Kuwaiti consciousness as far back as 1978, when they signed two regional protocols for the prevention of, and response to, oil spills.

When the war broke out, and when Kuwaiti light crude began to vomit into the waters off Mina al-Ahmadi, I indulged my biologist's version of the CNN complex: a restless, sickly fascination with the spill that had me sleeping on the floor in front of the television, eating Ramen noodles from the saucepan and counting the barrels as they spewed. It was an *Exxon Valdez* every few hours, by my calculation, surpassing the *Amoco Cadiz* and the *Castillo de Belver*, the biggest tanker spills in history, even before it showed up on the Allies' airphotos. Then it out-spilled Norwuz, the last Gulf disaster only two years ago, and finally took the world record from Ixtoc, the offshore blowout west of Yucatan in 1979. And on and on: a loading terminal connected to vast storage tanks connected to a huge field that would automatically refill those tanks, on demand. Was this it? Was this the big one, the nuclear winter, the global toxin, the biosphere collapse?

A glance at the record, after the first days had passed, was reassuring in a perverse sort of way. Maybe 10 percent of all offshore spills originate at the well. Offshore wellhead blowouts are common enough to have generated engineering solutions to staunch even the most brutal petroleum wounds. In this case the engineering solution was a tactical strike. On Saturday night, January 26, a cooler head and a steadier hand

than mine bombed the flow regulators, stifling the release to a trickle and, for a while, the coalition forces could get back to the business of tearing up the Tigris and Euphrates Valleys and the overgrazed deserts of Kuwait. Final total of this "spill" by most accounts was close to 500 million gallons.

Sooner or later, as I scanned the papers for damage reports, I felt I'd come across the name of a human being I knew; not an F-111 pilot or a petroleum geologist or a Saudi prince but an ecologist, rolling up his or her sleeves to do something about the mess. It turned out to be John Walsh, a Bostonian who'd given a seminar on animal rescue techniques back around 1975 or 1976 and now heads the World Society for the Protection of Animals. He'd been into Kuwait City within a couple of days of liberation to inspect the zoo and found about what you'd expect, a vicious massacre of nearly everything for food or booty or spite. An elephant and a giraffe still stood, against all the odds, amid carcasses, bones and the stench of other captive animals killed or starved to death.

By the cease-fire, his team had washed about 700 birds, mostly black-necked and great-crested grebes, common cormorants and their threatened relatives, the Socotra cor-

morants. Perhaps half of them will survive. The first of the spring migrants were arriving by early March, and there are almost 150 species of birds that migrate up that warm, shallow sea. There are also 73 varieties of coral; falcons, osprey and flamingoes; dolphins and sea turtles. The turtles, hawksbill and green, are endangered and threatened, respectively. They will be arriving by early summer to nest on beaches that may not be readily recognizable as such.

From a distance you might mistake the Persian Gulf for an abnormally large estuary, but for its high salinity and multi-year flushing rate: averaging only 100 feet deep, with low shores and islands that rise reluctantly out of it,

in thousands of acres of steamy seagrass and mangrove swamp. Not to overrate the place, it also is surrounded by salt flats that are as crusty and mineralized and lifeless as anywhere on earth.

So how to rate all this? What is the "collateral" environmental damage of the Gulf War? Kuwaiti crude is "light," which means it has more volatile fractions. It's more toxic up front, but it also evaporates more quickly. Maybe 15 percent will vaporize out, leaving a viscous sludge. A NOAA scientist, speculating on Gulf oil spills before hostilities started, thought that once sandstorms began in the spring, most of the remaining oil would sink to the bottom. These storms do drop a lot of dust: a quarter-inch can precipitate out on the decks of a ship from a good *shemal*. Seeding the slick with desert sand could get a lot of oil out of the water column.

The bad news is that "sinking agents," in the parlance of spill control, either suffocate bottom life when they work, or simply release the stuff back to the surface after a time. Other immediate treatment strategies were not even wishful thinking. The old *Valdez* debates about the rapid deployment of containment booms and whether or not to use dispersants were moot in the war zone. Even had they not been, there were not

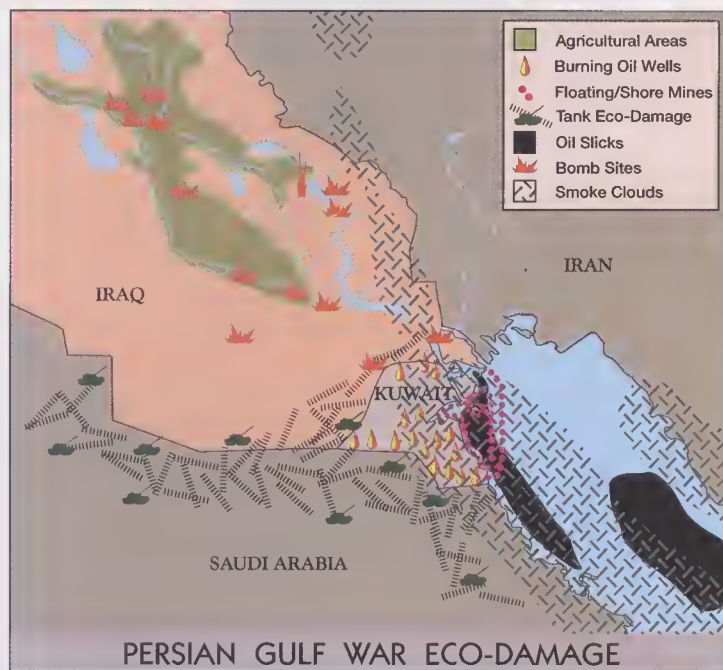




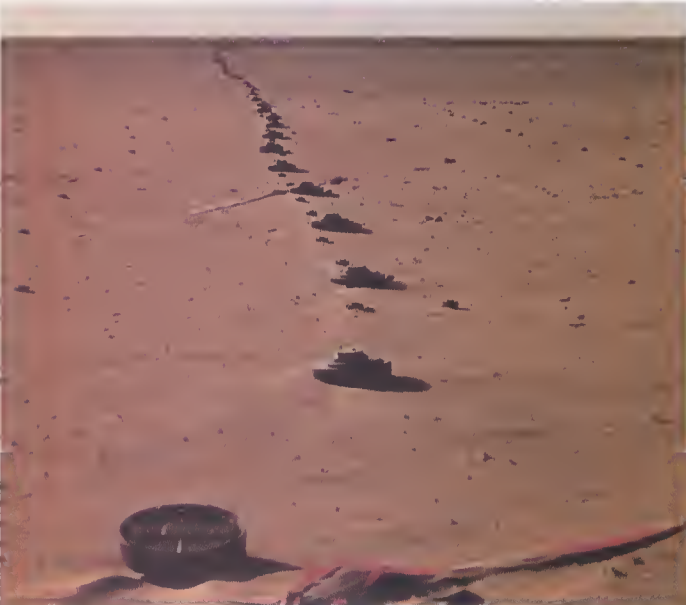
Photo: Peter Turney/Black Star

Of Kuwait's nearly 1,000 oil wells, more than 600 are still ablaze, pouring soot, smoke, carbon monoxide, nitrogen dioxide and sulfur dioxide into the air above the Gulf as US Marines begin to pull out. The fumes pose a special risk for local older residents, children and the infirm as black smoke clings to the landscape when the winds stop. Some experts say breathing the air is the equivalent of smoking five packs of cigarettes a day. "It looks like what the end of the world must look like," noted one observer. Though visually disturbing, the smoke is not yet expanding into the upper atmosphere to create the global catastrophe some scientists originally feared. Nevertheless, ground temperatures are 20 degrees F. cooler under the billowing smoke than where the sky is clear and only time will tell if the smoke affects the pattern of monsoons in the Indian subcontinent. Kuwaiti officials claim 6 million barrels per day are going up in smoke. The fires may take more than two years to extinguish.

Photo: Sadyrski Mikami/DOD Pool-Wide World Photos



Photo: Sadyrski Mikami/DOD Pool-Wide World Photos



The Persian Gulf war also left a legacy of death on the desert in the form of destroyed Iraqi convoys, miles of minefields and an untold number of dead. Although few allied forces were killed in action, estimates of Iraqi deaths range to over 100,000. Yet the numbers include neither civilian deaths nor the loss of those involved in political uprisings just after the Allied forces' ceasefire. The casualty figures also don't reflect the impact of 800,000 troops with their gear containers of camouflage paint and packing crates, machinery and toxic effluents and other trash and waste tramping in a desert environment that had never before been more than sparsely populated. While visually empty, the fragile desert soils were held in place by micro-organisms and are as sensitive to impact as the Arctic tundra.

Photo: Win McNamee DOD Pool/Reuters-Bettmann





enough booms in the world to deal with this one. Dispersants, dumped on this mess at recommended rates, would have had to be in quantities equivalent to the fifth or sixth largest spill in history. Evaporation and the *shemal* are about the only two things combatting the spill through spring. Whether it's floating or on the bottom, the oil will still be around. The book on the Gulf Spill is going to be one of those scenarios that should have stayed in someone's computer model.

The coral reefs are vulnerable, and if they go—which depends on winds and currents and how fast the oil sinks—the beaches and eventually the turtle eggs will be destroyed as well. The marsh grass can be wiped out, nurseries for fish and shellfish and forage for the dugongs. For larger animals, oil not only enters the food chain, it breaks it. Intestines coated with oil do not absorb properly, and as we've learned in Alaska, it does damage to kidney, liver, lungs and immune systems.

Oil does biodegrade, eventually. The Bay of Campeche in Mexico, ten years after the runaway Ixtoc well was finally corked, is a partial analog to the Gulf, semi-enclosed, shallow and warm. It got about a quarter as much oil as came from Mina al-Ahmadi and has, according to some researchers, come limping back on line as a functioning ecosystem. There will be healing, but in that body of water and with that much oil waiting for biodegradation, it is a little like hoping for a new planet. The 1974 supertanker *Metula*, grounded in the Strait of Magellan, might make another comparison, this one a worst-case. Nobody bothered to clean up after the *Metula*. A team of scientists six years later concluded that much of the oil would persist for yet a hundred years.

In the Persian Gulf there could be an appalling and lengthy void. It will never be what it was from the time of Mohammed to the arrival of the British in the 18th century, when its wealth

A resident of an overgrazed landscape in an increasingly lifeless land, a traditional Bedouin walks with traditional desert transportation into the age of a "new world order" and its implements.

was based on pearl diving and piracy. Something will be missing. Red-breasted geese and spotted swans, by late February, were appearing in Cyprus on what may become a permanent detour. And we may have to say farewell to the mermaids, the shy and sleek mammals that have risen seductively from the shallows since the days of Sindbad. Those that don't choke may starve. Much of the seagrasses they graze, that may have looked like skirts or veils to eyes of lovesick sailors, could disappear under asphalt as uniform and thick as a parking lot.


The order of sirens lost a third of its sisterhood when the Stellar's sea cow was hunted out of its existence in the Bering Straits a hundred years ago. The dugong's cousin, the manatees of the West Indies, are endangered, beset by everything from boat propellers to plastic bags. And now, it seems the dugongs of the Persian Gulf may have bewitched their last mariner and we find ourselves once more behind the curve, helpless in the face of what humanity has wrought, leaving nature to rescue herself. ❦

T.A. Roberts is a senior biologist for Biosystems Analysis, Inc. of Santa Cruz, California. He is author of a book of natural history essays, Adventures in Conservation. His second novel on ecological themes, Beyond Saru, appears this fall.

For further information on the Persian Gulf contact the following:

World Society for the Protection of Animals
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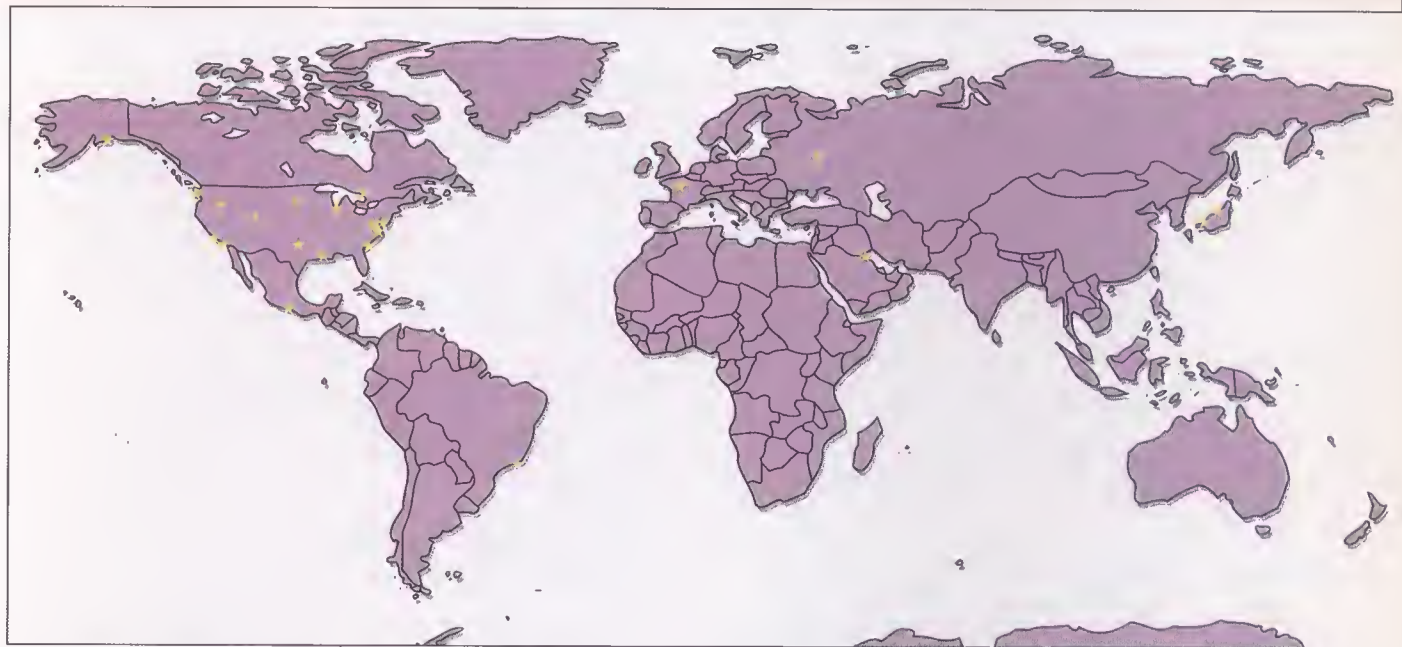
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JOURNAL

DIARY AND CALENDAR OF ENVIRONMENTAL HAPPENINGS



JOURNAL documents daily happenings taking place around the world during the eight weeks prior to this issue of **BUZZWORM**. News briefs are considered from a variety of sources, including *The New York Times (NYT)*, *Associated Press (AP)*, *Reuters (R)*, *The Los Angeles Times (LAT)*, *International Herald Tribune (IHT)*, *The Wall Street Journal (WSJ)*, *Washington Post (WP)* and *United Press International (UPI)*. The source and date are provided for ease in consulting the original story for more information. Also presented are a calendar of forthcoming meetings and a report on the latest projects of national and international environmental organizations.

DIARY

FEBRUARY

2 NEW YORK—New York City is suing the US Postal Service to halt construction of a proposed \$100-million mail center in Westchester County, which the city says would pollute Reservoir, the central receiving point for **water** from the upstate Catskill and Delaware watersheds. —*NYT* 2/3

3 WASHINGTON—Chairman John E. Frohnmayer of the National Endowment for the Arts changed his mind and now will approve a \$10,000 grant to Mel Chin, an artist who has proposed an **environmental art project**. Chin proposes to collaborate with a Department of Agriculture research agronomist on a project using plants that absorb toxic metals to clean a waste site. —*NYT* 2/4

3 LOS ANGELES—Unocal Corp. and Southern California Gas Co. announced that they will sell **compressed natural gas** to the public from two Unocal service station sites which will be announced by the end of the year. —*LAT* 3/3

5 GENESEO, NY—Construction workers digging in a peat bog discovered the nearly **complete skeleton** of a 10,000- to 12,000-year-old mastodon, an early ancestor of the elephant. —*NYT (AP)* 2/6

5 TULSA, OK—Cowboys inspecting fences on a ranch in Osage County found the carcasses of four **bald eagles** and 28 eagle feet, most of them missing two claws. —*NYT (AP)* 2/6

6 WASHINGTON—The Department of Energy announced a delay of one to two years in stabilizing the

radioactive waste problem at the Hanford nuclear reservation near Richland, Washington. The state of Washington and the EPA are accusing the department of violating a cleanup agreement reached two years ago. —*NYT* 2/6

6 WASHINGTON—President Bush signed the bill which will compensate Vietnam War veterans exposed to the herbicide **Agent Orange**. The measure permanently extends disability benefits to Vietnam veterans suffering from non-Hodgkins' lymphoma and soft-tissue sarcoma

which are presumed to be caused by Agent Orange. —*NYT (AP)* 2/7

6 WASHINGTON—The Department of Energy proposed **shutting down** all but five of its weapons plants for good and letting private companies own the factories. The weapons within the privately owned companies would be nonnuclear only. —*NYT* 2/7

7 NEW YORK—Analysis of tiny glass fragments from Haiti, presumably produced in the extreme heat of an asteroid or comet

ASBESTOS UPDATE

A panel of federal judges, appointed by Chief Justice William H. Rehnquist to study the role of the courts in resolving asbestos cases, urged Congress to find a "national solution" to the large number of lawsuits, the delays in settlements and the depletion of the money available for victims by the large fees of lawyers. The panel recommended that Congress grant courts greater powers to consolidate cases.

Until Eagle-Pitcher Industries filed for bankruptcy in January, Federal District Judge Jack B. Weinstein of Brooklyn, New York, had hoped to use his proposed class-action settlement against the former asbestos-producing company as the basis for resolving tens of thousands of asbestos claims against other hard-pressed companies. The company instead filed for bankruptcy. The proposed class-action settlement was opposed by most plaintiffs' lawyers, who said asbestos victims would get more money in a bankruptcy proceeding, in which all unsecured creditors would be treated equally and would have priority over shareholders. Federal appeals courts around the nation have also discouraged class-action suits in asbestos cases because they often do not have sufficiently common elements of fact and law.

impact, has encouraged geologists to proclaim that a massive object from outer space **smashed into Earth** 65 million years ago and caused the extinction of the dinosaurs. —NYT 2/7

7 MOSCOW—Prosecutor General Nikolai Trubin conceded that there had been gross failures in the Soviet government's cleanup plan for the **Chernobyl** incident and said some officials would face criminal charges for failing to protect the public properly from fallout and continuing radiation contamination. —NYT 2/8

7 NEW YORK—Dr. T. M. L. Wigley, a climatologist at the University of East Anglia in England, has proposed that reducing the burning of fossil fuels could actually **worsen global warming** in the short run. The burning of fossil fuels emits sulfur dioxide particles which reflect sunlight, cooling the earth and partly offsetting whatever warming may be taking place. A reduction in the burning of fossil fuels would reduce this cooling effect, says Wigley. —NYT 2/7

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ment concluded after an 18-month investigation that the Energy Department has yet to reach a realistic assessment of the magnitude and cost of cleaning up wastes and contamination from 40 years of **weapons production**. —LAT 2/11

11 IDAHO FALLS, ID—A mechanism for dissolving unused nuclear fuel malfunctioned and sprayed **radioactive acid** over three workers at the Idaho National Engineering Laboratory's chemical processing plant. —NYT (AP) 2/12

14 RIO DE JANEIRO—Seeking to contain an outbreak of **cholera** in Peru, health authorities across Latin America halted food imports. —NYT 2/15

15 WASHINGTON—In a February action, the EPA ruled it will permit the continued use of agricultural

21 NEW YORK—A rare fish species, *opal allotoca*, that was believed to be **extinct for 20 years**, has been rediscovered in a pond near a dried lake bed in Mexico where it once flourished. The species dates back to before the last ice age and was believed to have existed only in Lake Magdalena, a landlocked lake in an arid region 100 miles west of Guadalajara. —IHT (NYT) 2/21

22 DHARAN, Saudi Arabia—Experts in Saudi Arabia now judge the spill in the Persian Gulf south of Kuwait to be **138.6 million gallons** of oil. —WP 2/23

24 NEW ORLEANS—Louisiana has enacted a new tax rule that ties the amount of business property taxes a company pays to its **environmental record**. —NYT 2/27

25 DETROIT—The General Motors Corporation and the Gas Research Institute said they would spend \$39 million to develop trucks that run on cleaner-burning **natural gas** and would begin production by the mid-1990s. —NYT 2/26

25 NEW YORK—The Food and Drug Administration has approved the first American tests on humans of a **purified blood** product from cattle. The experiments may lead to safer and cheaper blood transfusions, says the product's manufacturer, Biopure Corporation of Boston. —NYT 2/25

25 ANACORTES, WA—An estimated 210,000 gallons of oil spilled as a tanker unloaded at a Texaco refinery and 8,400 gallons reached Fidalgo Bay. Some 35 **dead birds** have been found and 36 others are being treated. —NYT (AP) 2/26

25 TORONTO—Bowling to nearly four years of pressure from animal rights advocates and a plunge in sales and profits, the Hudson's Bay Company of Canada announced that it was closing the **last fur salons** in its Hudson Bay department stores. —NYT 2/26

27 MEXICO CITY—In one of the largest private **"debt-for-nature"** exchanges yet negotiated, Mexico has accepted an agreement, negotiated by a private American ecological group, called Conservation International, that would reduce its foreign debt by \$4 million in return for a Mexican government commitment to help preserve the country's tropical rain-

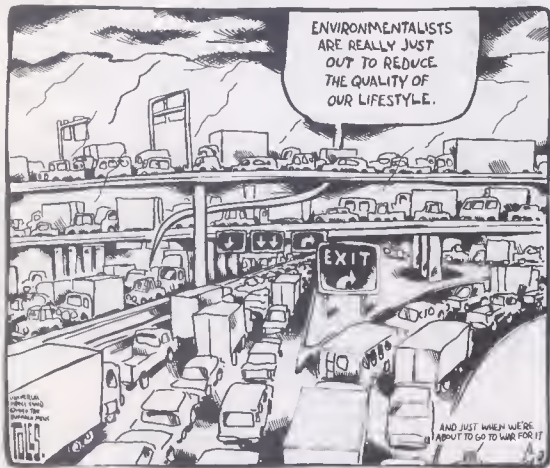
CALIFORNIA DROUGHT

Because of the drought now entering its fifth year, Californians are wondering where their next drink will come from and who will be asked to pay the price.

California and the Colorado River Board have been negotiating with other Colorado Basin states about obtaining a larger portion of the Colorado River water. Representatives of both sides said an agreement is likely. Other solutions, like conservation, desalting sea water, seeding the clouds and piping in water from Texas flood plains, have also been discussed. California Governor Pete Wilson has offered plans to encourage voluntary transfers of water to a "water bank." The new water bank would then buy water from "willing sellers," pool it in reservoirs and resell to areas most in need. The most obvious source of such water is farmers, who enjoy historic legal rights to cheap water and whose supplies cannot be arbitrarily reduced by state legislation. Over the last two generations, California built vast water projects to channel water from the mountains and streams of northern California to create the nation's largest farm industry in the Central Valley.

California farmers use 85 percent of all available water in the state. Alfalfa alone, which is sold mainly as hay for cattle and horses and requires more water per acre than any major crop except rice, uses more water than the combined household needs of 30 million Californians each year. Last year more than 20 percent of the state's farmland was planted with alfalfa, which used 16 percent of all available water. The California cotton harvest took another 16 percent of acreage and 8 percent of water.

Farm interests defend the growing of alfalfa, which brought receipts of \$869 million to California farmers in 1989. It is considered essential to the state's \$2 billion dairy industry, second only to Wisconsin's. California Farm Bureau Federation officials believe it would not be economical to import hay from distant states.



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9 WASHINGTON—The Department of the Interior is proposing to open thousands of miles of the outer continental shelf to **offshore oil and gas exploration**, calling for new lease sales off the East Coast, the Florida Panhandle, parts of Southern California and vast areas of Alaska. —NYT 2/10

10 TOKYO—A pipe broke in a 19-year-old nuclear plant located in Mihama and touched off a series of events that ultimately forced the **emergency flooding** of the plant's reactor to cool its nuclear fuel. Officials say no radiation escaped and no one was injured. —NYT 2/11

11 WASHINGTON—The Congressional Office of Technology Assess-

chemicals that find their way into processed foods and that pose no more than a **one-in-a-million risk of cancer** over a lifetime of regular consumption. —WP 2/16

16 WASHINGTON—The Defense Department has decided against giving US troops an experimental **chemical warfare drug** after new tests suggested it posed potentially life-threatening hazards and might be less effective than originally thought. —WP 2/17

20 ANCHORAGE—Federal and state officials are investigating allegations that Exxon Corp. illegally shipped **hazardous wastes** in the ballast water of its oil tankers to a treatment plant in Alaska. —LAT 2/20

forests and other fast-disappearing natural resources. —IHT (NYT) 2/27

28 WASHINGTON—The concentration of **nitrous oxide**, "laughing gas," in the atmosphere appears to be rising at the rate of approximately 1 percent every five years. The preparation of adipic acid used in making nylon fiber may account for

as much as 10 percent of the input, according to two chemists at the University of California at San Diego. —IHT (WP) 2/28

MARCH

1 WASHINGTON—EPA is investigating allegations that Craven Laboratories, Inc., a product safety testing laboratory in Texas, **fabricated research** needed by chemical companies to license some of the most widely used pesticides in American agriculture. —NYT 3/2

4 GRAND RAPIDS, MN—A pipeline carrying crude oil, owned by Lakehead Pipeline, spilled an estimated 630,000 gallons of oil onto the ground and into the nearby Prairie River. Some 200 to 300 people who lived within half a mile were **evacuated**. —NYT 3/5

6 WASHINGTON—The Louisiana-Pacific Corporation said it would phase out **clearcutting** trees on its California timberlands. —NYT 3/7

6 WASHINGTON—Believing its authority to review a federal project had been by-passed, the House Interior Committee moved to delay the opening of the nation's first permanent **nuclear waste** repository. The repository, the Waste Isolation Pilot Plant, is an \$800 million tomb in salt beds 2,150 feet beneath the desert, 26 miles east of Carlsbad, New Mexico. —NYT 3/7

7 NEW YORK—**Halley's comet** has unexpectedly erupted with an immense dust cloud that makes it hundreds of times brighter. Energy from the sun is thought to trigger such outbursts. —IHT (AP) 3/7

11 TOKAIMURA, Japan—High pressure readings forced a nuclear fuel reprocessing center in Tokaimura, 71 miles northwest of Tokyo, to automatically **shut down**. The incident was at least the third since the Mihama Nuclear

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Power plant accident on February 10. —WSJ 3/11

12 NEW YORK—EPA accidentally discovered what it believes is a safe and inexpensive way to destroy large amounts of polychlorinated biophenyls, or PCBs. The treatment process involves **quicklime**, a common mineral used to make cement, which, when mixed with oily sludge residues containing large amounts of PCBs, produces a chemical reaction that destroys the toxic material and leaves three relatively safe by-products—calcium chloride, water and carbon dioxide. —WSJ 3/12

12 CHARLOTTE, NC—The Coca-Cola Company's North Carolina bottling operation began a limited market introduction of the first soft drink bottles made with **recycled plastic**. The two-liter bottles of Coca-Cola Classic are made with a blend of 25 percent recycled plastic and 75 percent virgin resin. —NYT 3/13

12 WASHINGTON—The Exxon Corp. has agreed to **plead guilty** to a criminal charge arising from the 1989 Exxon Valdez oil spill and to pay a \$100 million fine, part of the \$1.1 billion Exxon is to pay over the next 10 years to settle civil and criminal cases arising from the spill. —NYT 3/13

12 WASHINGTON—Energy Secretary James D. Watkins announced that President Bush will **veto** any national energy strategy that does not include the President's proposal to allow drilling in part of the Arctic National Wildlife Refuge in Alaska. —NYT 3/13

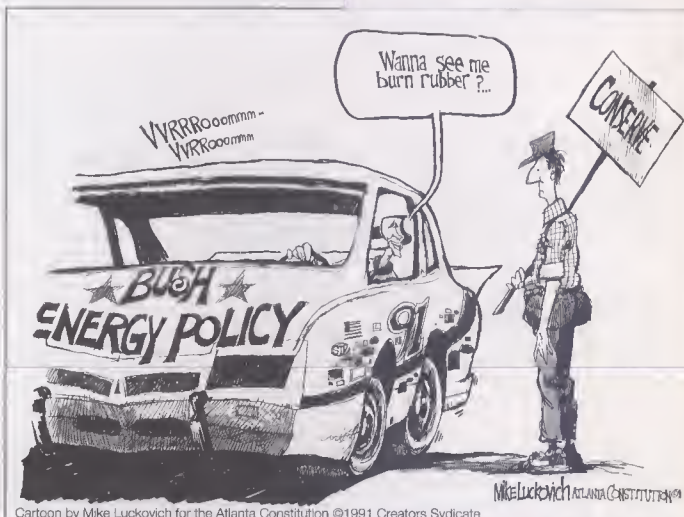
13 NEW YORK—American

scientists have found **dinosaur bones** on a windswept mountain near the South Pole, a discovery scientists say proves that dinosaurs were cold-weather as well as warm-weather creatures. —NYT 3/13

18 PARIS—Satellite images show that heavy pollution from Kuwait's **burning oil wells** is extending for hundreds of miles to the north and east. Specialists have concluded

20 WASHINGTON—The US issued a finding stating that Japan was contributing to the demise of the **hawksbill sea turtle**, an endangered species, by encouraging a lucrative domestic trade in eyeglass frames, mirror handles, ornamental combs and other items made from imported turtle shells. This finding could lead to sanctions against Japanese imports to the US of wildlife products, say the Commerce and Interior Departments. —NYT 3/21

22 DENVER—T. S. Ary, the head of the US Bureau of Mines, told miners, loggers and others who advocate development of federal land, that



Cartoon by Mike Luckovich for the Atlanta Constitution ©1991 Creators Syndicate

that the pollution will inflict most of its damage in a 500-mile range, mostly above Iran and Iraq, and that the pollution is not likely to have a serious impact on the global climate. —IHT (NYT) 3/18

19 NEW YORK—The Exxon Corporation will pay a \$5 million penalty as part of a **deal** to settle litigation over a 567,000-gallon oil spill over a year ago in New York Harbor. —NYT 3/20

19 WASHINGTON—Researchers studying workers' exposure to low levels of radiation at the Oak Ridge National Laboratory in Tennessee say they found a **clear link** between the rate of deaths from cancer and levels of radiation exposure: As radiation exposure increased, so did the number of deaths from cancer. —NYT 3/20

20 NEW YORK—With nearly 8 million people threatened by drought-induced **famine** this year, the Sudanese government has agreed to allow a large new relief effort. The cost of the planned relief operation is estimated at \$716 million, with the US supplying about one-third of the food. —IHT (NYT) 3/20

environmentalists are "a bunch of nuts" and that he does not believe in endangered species. He later qualified his comments on endangered species. —NYT (AP) 3/23

26 SAN FRANCISCO—The Timber Association of California rejected legislation negotiated between a coalition headed by the Sierra Club and Sierra Pacific Industries which would have severely limited **clearcutting in ancient forests**. The association instead offered a plan of its own which limits restrictions on some practices and preserves others; it was immediately rejected by environmentalists. —WSJ 3/26

27 SACRAMENTO, CA—Headwaters Forest, a stand of redwoods on 2,900 acres in Humboldt County, may be preserved by millions of dollars in junk bonds seized by federal regulators in January when the Columbia Savings and Loan of Beverly Hills failed. Maxxam Inc., the conglomerate which owns the land, may **sell the forest** to the state to escape environmental protests and lawsuits over logging rights. —NYT 3/27

NORPLANT

The new birth control device, Norplant, approved by the Food and Drug Administration on December 10, 1990, has become the focus of a heated debate over how much pharmaceutical companies should charge state agencies for products provided free of charge to the poor.

Norplant prevents pregnancy for up to five years and consists of several soft, matchstick-sized rubber tubes that are surgically implanted under the skin of the woman's upper arm, where they slowly release the hormone progestin. When the implant is removed, fertility is restored. Full price in the US for the Norplant device is \$350, but it is also sold in 17 other countries. In some, it is priced as low as \$23.

For decades, drug companies have discounted drugs to charitable groups, public health agencies, the Veterans Administration and health maintenance organizations. Wyeth-Ayerst Laboratories, makers of the new contraception, have decided not to discount Norplant because of the unusual costs associated with training physicians on how to implant the devices.

28 RICHLAND, WA—A new analysis by the EPA shows that dirt around the Hanford nuclear reservation near Richland, Washington, may be as **dangerous** as highly radioactive wastes stored in special tanks. —NYT 3/28

31 AHMADI, Kuwait—Because of lack of available water, it will be at least a week or more before firefighters can begin trying to put out the hundreds of **blazing oil wells** started more than a month ago. —NYT 4/1

CALENDAR

MAY

3-5 Heartwood will be hosting the Heartwood Forest Council at the Shawnee National Forest. Call Mindy Harmon, (618) 684-6897 or Andy Mahler, (812) 723-2430.

4-5 The National Parks and Conservation Association is sponsoring the second annual March for Parks. Call (800) NAT-PARK for information on local walks.

6-10 The US Department of Energy will hold the 13th Symposium on Biotechnology for Fuels and Chemicals in Colorado Springs. Call (303) 231-1753.

12-15 The Annual Meeting of the Northeastern Division of American Fisheries Society will be held in Maine. Call (207) 289-5261.

18-23 The National Wildlife Federation is sponsoring the Washington Action Workshop in Washington, DC. Call (202) 797-5445.

20-22 BioCycle Magazine will hold

JOURNAL

its 21st Annual BioCycle National Conference in Pennsylvania. Call (215) 967-4135.

20-26 The 1991 American Tour de Sol, the solar and electric car championship, will begin in Albany, New York. Call Nancy Hazard or Dr. Robert Wills, (413) 774-6051.

31-June 3 The 13th annual Mountainfilm festival will be held in Telluride, Colorado. Call (303) 728-4123.

JUNE

1 The third annual Clean the Bay Day, sponsored by the Center for Marine Conservation, will be held in the Chesapeake Bay area. Call (804) 851-6734.

3-5 Renew America will host the Environmental Leadership Conference in Washington, DC. Call (202) 232-2252.

4-8 B.A.S.S., Inc. is sponsoring the Warmwater Fisheries Symposium I to be held in Arizona. Call Al Mills, (205) 272-9530.

5-6 The Center for Science in the Public Interest will hold a conference entitled "Diet and Health—A 20-Year Perspective" to be held in Washington, DC. Write CSPI—Conference, Ste. 300, 1875 Connecticut Ave. NW, Washington, DC 20009.

16-21 The 84th Annual Meeting and Exhibition of the Air and Waste Management Association will be held in Vancouver, Canada. Call (412) 232-3444.

17-19 The City of San Diego will hold its Second Annual San Diego Recycled Products Symposium and Vendor Show in California. Contact Kenneth Morris, (619) 492-5010.

19-20 The Association of Ground Water Scientists and Engineers will offer an overview course on surface geophysics in Florida. Call (614) 761-1711.

20-22 The National Forest Centennial will host a Symposium/ Workshop on National Forest History and Interpretation in Montana. Call (406) 243-4623 or (406) 243-2900.

21-25 The fourth annual Inland Sea Kayak Symposium will be held in Bayfield, Wisconsin. Call (715) 779-3320.

23-29 The fourth annual Wildbranch Workshop in Outdoor, Natural History and Environmental Writing will be held in Vermont. Call (800) 648-3591.

JULY

1-7 The Conference on Limnology of Mountain Lakes will be held at Tatranska Lomnica in the High Tatra Mountains of Slovakia. Write Dr. Jan Fott of Evzen Stuchlik, Department of Hydrobiology, Charles University, Vinicna 7, 128 44 Prague 2, Czechoslovakia.

8-14 Threshold is holding a seven-day solar eclipse viewing in Southern Baja. Call Mondays and Wednesdays, (602) 432-7353.

10-14 The East-West Center Association is hosting an international conference on "Asian Pacific Cooperation and Constraints in the Year 2000 and Beyond: Challenging Issues," in Bangkok, Thailand. Call (808) 944-7205.

15-19 The Annual Meeting of the Western Division of American Fisheries Society will be held in Montana. Call Pat Dwyer, (406) 587-9265.

21-27 The 1991 Audubon National Convention will be held in Colorado. Call Susan Carlson, (202) 547-9009.

29-31 The National Water Well Conference on Environmental Site Assessments will be held in

Columbus, Ohio. Write Jackie Mack, AGWSE Liaison, 6375 Riverside Drive, Dublin, Ohio 43107.

AUGUST

2-7 The North American Wildlife Park Foundation will hold a six day Wolf Behavior Seminar in Indiana. Call Deborah Gray, (317) 567-2265.

7-11 Vegetarian Frontiers, a vegetarian conference co-hosted by the American Vegan Society, the



THE CREATURE FROM THE BLACK LAGOON

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Vegetarian Union of North America and the Vegetarian Society of Colorado, will be held in Denver. Call (303) 777-4828.

25-30 The American Chemical Society will host the Fourth Chemical Congress of North America, in New York. Call (202) 872-4450.

ORGANIZATIONS

Last fall, **Defenders Magazine** began publishing a newsletter called *Wolf Action* that keeps conservation activists up-to-date on efforts to protect existing wolf populations and restore wolves to areas where they are now extinct. To receive *Wolf Action* write Defenders of Wildlife, 1244 19th St. NW, Washington, DC 20036.

Over 100,000 volunteers helped the **Center for Marine Conservation** collect valuable information on beach debris by documenting every scrap of trash collected in the 1990 fall international beach cleanup. The cleanup not only made the beaches from Alabama to Alaska, Canada to



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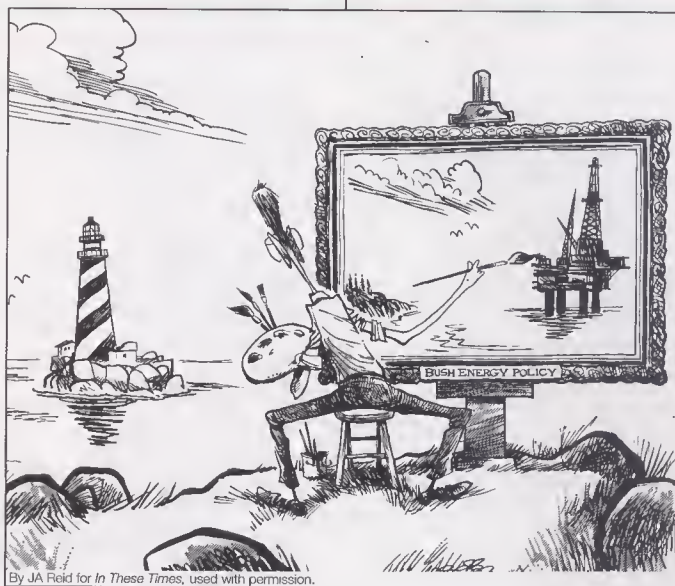
Japan cleaner and safer, but it also assisted policymakers in finding those who violate anti-pollution laws along our coasts. The Third Annual Clean the Bay Day in the Chesapeake Bay area is scheduled for June 1. Contact Center for Marine Conservation, 1725 DeSales St. NW, Washington, DC 20036, (202) 429-5609.

In October, the **Union of Concerned Scientists** launched The Billion Pound Diet, a campaign to cut carbon dioxide emissions this year by a billion pounds through individual and collective action. Communities across the country participated in a week of education and action during October to kick off the campaign. Tally sheets were distributed during the week, asking individuals to make a personal commitment to reducing their carbon dioxide emissions. To join the diet contact Union of Concerned Scientists, 1616 P St. NW, Ste. 310, Washington, DC 20036, (202) 332-0900.

As of October, **Cultural Survival, Inc.**, a US-based nonprofit organization that promotes the rights of indigenous peoples, began selling sustainably-produced rainforest fruits, nuts, candies and soaps by mail. The mail-order program is designed to help Amazonian people increase their income while protecting their lands and resources. The products offered include Rainforest Crunch, Brazil and cashew nuts by the carton, sun-dried cashew fruit and soaps and massage bars containing Amazonian copaiba oil. Contact Rainforest Products, Cultural Survival, Inc., 53 Church St., Cambridge, MA 02138.

In December, **Concern, Inc.** published its latest community action guide entitled *Global Warming and Energy Choices*. The guide examines the complex issue of global warming in clear, nontechnical language and demonstrates how individuals and communities can act to limit further greenhouse gas emissions. Contact Concern, Inc., 1794 Columbia Rd. NW, Washington, DC 20009, (202) 328-8160.

Buyer Be (A) Ware: The Fundamentals of Environmental Property Assessments, the new 240-page **National Water Well Association** book, was released in January. Subjects discussed in this illustrated book include what an assessment is, why assessments are conducted, who participates in a typical study, how proposals are prepared, how an assessment is conducted and the standards now being developed. Appendices



By JA Reid for In These Times, used with permission.

include information on typical waste streams generated by small quantity producers, and listings of information sources at local, state, regional and federal government. To order a copy contact National Water Well Association Bookstore, P.O. Box 182039, Dept. 017, Columbus, OH 43218, (614) 761-1711.

In February, the **World Society for the Protection of Animals** sent John Walsh, the organization's foremost authority on animal disaster relief, to Saudi Arabia to help organize an international rescue effort for wildlife affected by oil spills in the Persian Gulf. Walsh is working with Saudi wildlife experts, representatives of the International Seabird Rescue Center in California and other organizations to assess the feasibility of establishing a network of animal rescue and recovery centers in coastal areas. He is also evaluating the prospects for protecting other threatened marine life. The Saudi government has provided the society with a list of environmentally sensitive sites where action could be taken to prevent further ecological disaster. Contact World Society for the Protection of Animals, Western Hemisphere Office, P.O. Box 190, 29 Perkins St., Boston, MA 02130-9904, (617) 522-7000.

In February, a coalition of conservation groups, gardening clubs, Native American organizations and botanical gardens began an Arizona-wide program to protect and honor historic "heirloom" fruit

and nut trees. Called **Arizona Regis-TREE**, this first-of-its-kind program promotes conservation of important perennial food plants. The plants chosen may be the last living collection of a preferred fruit variety, a historic tree or an unusually good-tasting stand of wild mountain berries. Contact Arizona Regis-TREE, % Native Seeds/SEARCH, 2509 N. Campbell Ave., #325, Tucson, AZ 85719, (602) 327-9123.

The **Outdoor Industry Conservation Alliance**, a group of 26 outdoor businesses, began supporting the expansion of a prime hiking trail in Wisconsin and the development of Washington state's first climbing park, in February. Wisconsin's Ice Age Park and Trail Foundation will

use Alliance funds to develop a volunteer outreach program and double the trail's size by an additional 500 miles. The Alliance monies will also ensure that property improvements at Washington's Peshastin Pinnacles are made so the state can accept the area as a public park. Contact the Outdoor Industry Conservation Alliance, P.O. Box 88126, Seattle, WA 98138-2126, (206) 395-5957.

On February 15, the **Center for Policy Alternatives** announced the release of "Creating Markets: The Next Step for State Recycling Programs," a report describing "final markets" as the needed next demand step for waste recycling after source separation and collection. "Creating Markets" provides information on policy options for states to increase supply and demand and provides financial resources for recycling markets. Along with an analysis of policy options, the report provides lists of resources and contacts and appendices summarizing specific state and federal programs. "Creating Markets" costs \$10. Contact Center for Policy Alternatives, 1875 Connecticut Ave. NW, Ste. 710, Washington, DC 20009, (202) 387-6030.

An information guide on resources for an environmentally-friendly Hawaiian vacation is now available through **Kalani Honua Conference and Retreat Center**. The two-page guide focuses on the Big Island/Hilo area and lists addresses of groups offering guidebooks and information, nature tours, resources for action to save Hawaiian rainforests, budget accommodations and contacts for native Hawaiian organizations. Contact Shelley Attix, Kalani Honua Conference & Retreat Center, RR 2, Box 4500, Dept. ECO, Pahoa, HI 96778, (808) 965-7828.



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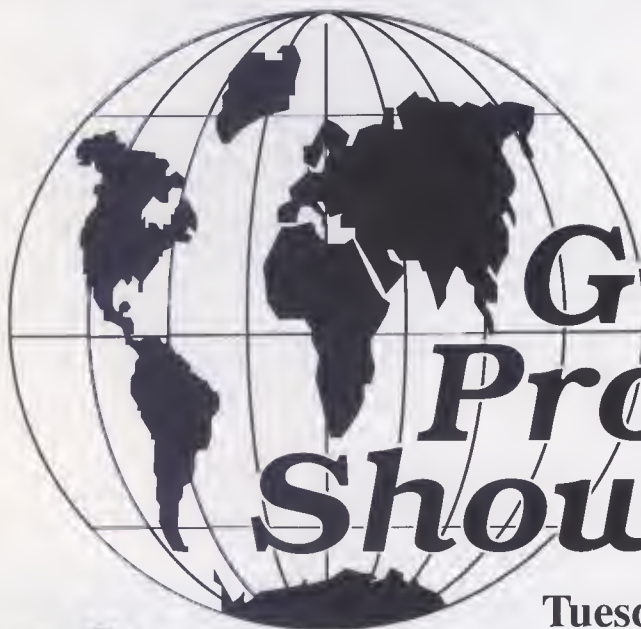
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THE 1991 DIRECTORY TO ENVIRONMENTAL ORGANIZATIONS

When two people come together to discuss a subject, new ideas, new solutions and a greater understanding of a mounting problem is found. As people begin to discuss their new ideas with others, a group is formed. When a group identifies its common goals and acts on them, an organization emerges.

In the following pages, The 1991 Directory to Environmental Organizations will introduce you to over 80 organizations whose interests lie in saving and preserving earth's natural worlds. This directory provides the concerned citizen with a diverse listing of organizations which have from small to large



Illustration: Jill Englehardt

memberships, local to worldwide opportunities, specific biospheres to varied plant and wildlife population research programs. Some organizations listed are specifically research oriented, while others stress active involvement through field work, volunteer programs or internships. Most of the groups listed are nonprofit, membership organizations. Many offer educational

programs and a subscription to the organization's publication with membership. Some of these newsletters and publications are offered through BUZZWORM's **ECONEWS** section. (See page 74.)

In compiling this third directory, each organization was asked to provide information about their

purpose, current emphasis, membership, funding and expenditures. The letters "dnd" next to a heading signify that an organization did not disclose that particular information.

Whether you are longing to join a large national program-funded organization which "preserves the integrity of natural ecosystems" and shows a profit of over \$4 million or feel more of an affinity to a 1,000-member organization whose main goal is to assure the survival of threatened tropical birds, this directory will help you find your piece of nature and the support you need to nurture it. Join the organization of your choice and become an active member, instead of a reactive observer.

THE 1991 DIRECTORY TO ENVIRONMENTAL ORGANIZATIONS

1. **ACID RAIN FOUNDATION, INC., THE**
1410 Varsity Dr., Raleigh, NC 27606
(919) 828-9443

Purpose: To foster greater understanding of global atmospheric issues by raising the level of public awareness, supplying educational resources and supporting research. **Current Emphasis:** Acid rain, global atmosphere, recycling and forest ecosystems. **Members:** dnd. **Fees:** \$35. **Funding:** Membership, 2.5%; Corporation, 0%; Other: Direct Public Support, 53.5%; Programs, 44%. **Annual Revenue:** \$100,000. **Usage:** Administration, 24%; Fundraising, 9%; Programs, 67%. **Volunteer Programs:** Education, development, library and marketing.

2. **AFRICAN WILDLIFE FOUNDATION**
1717 Massachusetts Ave. NW
Washington, DC 20036, (202) 265-8394

Purpose: Working directly with Africans at all government and private levels in over 25 countries since 1961, AWF's staff promotes, establishes and supports grassroots and institutional programs in conservation education, wildlife management training, and management of threatened conservation areas. **Current Emphasis:** Public awareness campaign to encourage ivory boycotts and support of Mountain Gorilla Project in Rwanda. **Members:** 100,000. **Fees:** No minimum for membership; \$15 to receive newsletter. **Funding:** Membership, 60%; Corporation, 15%; Foundations/Donor, 25%. **Annual Revenue:** \$4,676,000. **Usage:** Administration, 7%; Fundraising, 10%; Programs, 83%. **Volunteer Programs:** "How You Can Help" letter lists ways in which interested people can help curtail the demand for ivory.

3. **ALLIANCE FOR ENVIRONMENTAL EDUCATION**
10751 Ambassador Dr., Ste. 201
Manassas, VA 22110, (703) 335-1025

Purpose: To serve as an advocate for a quality environment through education and advanced communication, cooperation and exchange among organizations. **Current Emphasis:** In partnership with the US Environmental Protection Agency, the Alliance is establishing a network of interactive environmental education centers based at colleges, universities and institutions across America. **Members:** 175 organizations, millions of individuals. **Fees:** \$100-\$250. **Funding:** Membership, 10%; Corporation, 20%; Other, 70%. **Annual Revenue:** \$500,000. **Usage:** Administration, 20%; Fundraising, 10%; Programs, 70%. **Volunteer Programs:** Board membership, task forces, special committees, regional advisory councils and internships.

4. **AMERICAN ASSOCIATION OF ZOOLOGICAL PARKS AND AQUARIUMS**
7970-D Old Georgetown Rd.
Bethesda, MD 20814, (301) 907-7777

Purpose: A professional organization representing 156 accredited zoos and aquariums in North America. The primary goal is to further wildlife conservation and education and to enforce a code of ethics for all individual members and zoological institutions. **Current Emphasis:** Wildlife conservation through captive propagation. **Members:** 5,600. **Fees:** \$30 for associates. **Funding:** Membership, 60%; Foundation/Donor, 9%. **Usage:** Conservation, 33%; Membership, 38%; Administration, 7%. **Volunteer Programs:** None.

5. **AMERICAN FORESTRY ASSOCIATION**
PO Box 2000, Washington, DC 20013
(202) 667-3300

Purpose: To maintain and improve the health and value of trees and forests, to attract and cultivate the interests of citizens, industry and government in tree and forest resources through action-oriented programs, information and communication. **Current Emphasis:** Global Releaf, an international campaign to encourage and assist people, businesses and governments to plant and care for trees to improve the environment and help curb the effects of global warming. Primary organizers of the Fifth National Urban Forest Conference, November 12-17, 1991, Los Angeles. **Members:** 112,000. **Fees:** From \$24. **Funding:** Membership, 30%; Grants, 32%; Other, 38%. **Annual Revenue:** \$3,355,729. **Usage:** Administration/Fundraising, 7%; Education, 62%; Projects, 15%.

6. **AMERICAN GEOGRAPHICAL SOCIETY**
156 Fifth Ave., Ste. 600
New York, NY 10010-7002, (212) 242-0214

Purpose: To expand and disseminate geographical knowledge through publications, awards, travel programs, lectures and consulting, with a strong emphasis on ecology and environmental issues abroad and in the

US **Current Emphasis:** Publication of *The Geographical Review* and *Focus* magazine, educational travel program, provision of lecturers to educational and business audiences and award program to encourage research. **Members:** 1,500. **Fees:** \$22. **Funding:** Membership, 8%; Corporation, 15%; Foundation, 7%; Other: Subscriptions, travel program, investments. **Annual Revenue:** \$540,000. **Usage:** Administration, 28%; Programs, 72%. **Volunteer Programs:** Volunteer positions available.

7. **AMERICAN HIKING SOCIETY**
1015 31st St. NW, Washington, DC 20007
(703) 385-3252

Purpose: Dedicated to protecting the interests of hikers and preserving America's footpaths. Over 70 club affiliates provide for information exchange within the trails community. **Current Emphasis:** Maintaining a public information service to provide hikers and other trail users with facts regarding facilities, organizations, and best use of trails to protect the environment. **Members:** 5000. **Fees:** \$25. **Funding:** Membership, 36%; Corporation, 5.5%; Other: Publications and programs. **Annual Revenue:** \$250,000. **Usage:** Administration, 22%; Fundraising, 3.5%; Publications, 41%. "Volunteer Vacations," 10%; Events, 9.3%; Legislative, 1.6%. **Volunteer Programs:** Encourages volunteers in trail building and maintenance through work trips called "Volunteer Vacations" and by publishing a directory of volunteer opportunities on public lands.

8. **AMERICAN HORSE PROTECTION ASSOCIATION, INC.**
1000 29th St. NW, Ste. T-100
Washington, DC 20007, (202) 965-0500

Purpose: Dedicated entirely to the welfare of equines, wild and domestic, by fighting for the humane treatment of horses through litigation, investigation and public awareness of proper and humane horse care. **Current Emphasis:** Preserving and protecting horses and burros; preventing abuse of horses in competition; solving problems of neglect and mistreatment of horses; promoting safe and humane equine transportation. **Members:** 8,000. **Fees:** \$15. **Annual Revenue:** \$260,000. **Volunteer Programs:** State Representative program.

9. **AMERICAN HUMANE ASSOCIATION**
P.O. Box 1266, Denver, CO 80201
(303) 792-9900

Purpose: To prevent the neglect, abuse, cruelty and exploitation of children and animals and to assure that their interests and well-being are fully, effectively and humanely guaranteed by an aware and caring society. **Members:** 30,000. **Fees:** \$15-\$50. **Funding:** dnd. **Annual Revenue:** \$3,000,000. **Usage:** Administration/Fundraising, 20%; Programs, 80%. **Volunteer Programs:** None.

10. **AMERICAN PEDESTRIAN ASSOCIATION**
P.O. Box 624, Forest Hills, NY 11375

Purpose: Works to preserve, protect, support and defend the pedestrian environment against vehicular encroachments of all types. Relates environmental costs to vehicular traffic. First group in USA fighting DWI. **Current Emphasis:** Supporting Urban Environmental Trust Fund as counter to vehicular Highway Trust Fund. **Members:** 150-200. **Fees:** \$5, domestic; \$8, foreign. **Funding:** Membership, 100%. **Annual Revenue:** \$500-\$600. **Usage:** Administration, 10%; Programs, 90%. **Volunteer Programs:** Occasionally.

11. **AMERICAN RIVERS**
801 Pennsylvania Ave. SE, Ste. 400
Washington, DC 20003
(202) 547-6900, Fax (202) 543-6142

Purpose: Nonprofit conservation organization leading the effort to protect and restore the nation's outstanding rivers and their environments. The organization has effectively preserved over 10,000 river miles for clean water, threatened fish and wildlife, recreation and scenic beauty. Concerns include dams, diversions, channelizations and adverse development. **Current Emphasis:** Federal, state river conservation efforts; wild and scenic river system; river threats—dams, de-

velopments, mining, etc.; hydropower relicensing; greenways; how to protect rivers. **Members:** 15,000. **Fees:** Begin at \$20. **Funding:** Membership, 33%; Corporation, 33%; Foundation/Donor, 33%. **Annual Revenue:** \$1,800,000. **Usage:** Administration, 10%; Fundraising, 12.3%; Programs, 77.7%. **Programs:** Federal river protection program; state river protection program; National Center for Hydropower Policy; rivers on public lands program; public education. **Volunteer Programs:** River activist network; office assistance. Special skills welcome. Occasional opportunities for interns; write for details.

12. **ANIMAL PROTECTION INSTITUTE OF AMERICA**
2831 Fruitridge Rd., Sacramento, CA 95831
(916) 731-5521

Purpose: To eliminate fear, pain and suffering inflicted on animals and to preserve threatened species. **Current Emphasis:** Publications, animal welfare issues, education and legislative issues. **Annual Revenue:** dnd. **Volunteer Programs:** Teachers are encouraged to participate in educating students using API "Know a Teacher" literature.

13. **CENTER FOR ENVIRONMENTAL INFORMATION**
46 Prince St., Rochester, NY 14607
(716) 271-3550

Purpose: Established to provide timely, accurate and comprehensive information on environmental issues. CEI has developed a multi-faceted program of publications, education programs and information services. **Current Emphasis:** Environmental education, ethics, laws, communication and global environmental change. **Members:** 700. **Fees:** \$25. **Funding:** Membership, 5%; Corporation, 5%. **Annual Revenue:** \$500,000. **Usage:** Administration, 5%; Fundraising, 10%; Programs, 85%. **Volunteer Programs:** Library services, conferences and program coordination and publications.

14. **CENTER FOR HOLISTIC RESOURCE MANAGEMENT**
5820 4th St. NW, Albuquerque, NM 87107
(505) 344-3445, Fax (505) 344-9079

Purpose: Community development based on a proven process of goal setting and decision making that helps communities restore their well-being and the natural resources on which they depend. **Current Emphasis:** Expanding the numbers of individuals capable of offering training in holistic resource management. **Members:** 1,500. **Fees:** \$35. **Funding:** Membership, 4%; Corporation, 11%; Foundation/Donor, 22%; Programs, 63%. **Annual Revenue:** \$900,000. **Usage:** Administration, 16%; Fundraising, 6%; Programs, 78%. **Programs:** Regular and special courses on holistic resource management, community development. **Volunteer Programs:** Currently looking for volunteers interested in becoming trainers in holistic resource management.

15. **CENTER FOR MARINE CONSERVATION**
1725 DeSales St. NW, Ste. 500
Washington, DC 20036
(202) 429-5609, Fax (202) 872-0619

Purpose: Center for Marine Conservation is the leading nonprofit organization dedicated solely to the conservation of marine wildlife and their habitats. Focusing on five major goals: conserving marine habitats; preventing marine pollution; fisheries conservation; protecting endangered species; and promoting and education of marine biodiversity. **Members:** 110,000+. **Fees:** \$20. **Funding:** Membership, 54%; Corporation, 15%; Foundation/Donor, 31%. **Annual Revenue:** \$3,600,000. **Usage:** Administration, 10%; Fundraising, 13.5%; Programs, 54%. **Volunteer Programs:** National Beach Cleanup in September. Some internships at national and regional offices.

16. **CENTER FOR PLANT CONSERVATION**
P.O. Box 299, St. Louis, MO 63166
(314) 577-9450, Fax (314) 664-0465

Purpose: To conserve rare and endangered native plants through research, cultivation and education at botanical gardens and arboreta in the United States. Through 20 affiliated gardens and arboreta, the Center establishes off-site germplasm collections in the National Collection of Endangered Plants. **Current Emphasis:** Five priority regions: Hawaii, Florida, California, Texas and Puerto Rico. **Funding:** Donations. **Annual Revenue:** \$865,000. **Usage:** Administration, 17%; Fundraising, 13%; Programs, 70%. **Volunteer Programs:** None.

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17. CENTER FOR SCIENCE INFORMATION

4252 20th St., San Francisco, CA 94114
(415) 553-8772, Fax (415) 661-4908

Purpose: To educate decision makers and journalists about the environmental applications of biotechnology.
Funding: Corporation, 5%; Foundation/Donor, 95%.
Annual Revenue: \$150,000. **Usage:** Administration, 10%; Fundraising, 5%; Programs, 85%. **Programs:** Publishing and distributing briefbooks and briefsheets.
Volunteer Programs: None.

18. CLEAN WATER ACTION

1320 18th St., NW, Washington, DC 20036
(202) 457-1286, Fax (202) 457-0287

Purpose: National citizens' organization working for clean and safe water at an affordable cost; control of toxic chemicals; protection and conservation of wetlands, groundwater and coastal waters; safe solid waste management; public health; and environmental safety of all citizens. **Current Emphasis:** Citizen organizing and education to effect environmental change and safety. **Members:** 600,000. **Fees:** \$24. **Funding:** Membership, 98%; Foundation/Donor, 2%. **Annual Revenue:** \$9,000,000. **Usage:** Administration, 7%; Fundraising, 27%; Programs, 66%. **Volunteer Programs:** Consumer education programs, community organizing.

19. CONSERVATION INTERNATIONAL

1015 18th St. NW, Ste. 1000
Washington, DC 20036
(202) 429-5660, Fax (202) 887-5188

Purpose: To conserve ecosystems and biological diversity, and the ecological processes that support life on Earth. **Current Emphasis:** Works with partner organizations and local people in tropical and temperate countries, particularly the "megadiversity" countries containing over half of all species, to develop and implement ecosystem conservation projects. **Members:** 50,000. **Fees:** \$15. **Funding:** Members, 15.2%; Corporation, 6%; Foundation/Donor, 78.8%. **Annual Revenue:** \$8,288,216. **Usage:** Administration, 7.9%; Fundraising, 6.6%; Programs, 85.5%. **Programs:** 21 country programs, science, communications, membership development and services, public education. **Volunteer Programs:** N/A.

20. THE COUSTEAU SOCIETY, INC.

930 W. 21st St., Norfolk, VA 23517
(804) 627-1144

Purpose: Dedicated to the protection and improvement of the quality of life. Founded in 1973 by Captain Cousteau and Jean-Michel Cousteau in the belief that an informed and alerted public can best make the choices to insure a healthy and productive world, the Society produces television films, books, membership publications, articles and offers lectures and a summer field study program. **Current Emphasis:** In the current "Rediscovery of the World" expedition, teams aboard the Society's research vessels *Calypso* and *Alyone* are circumnavigating the earth to take a fresh look at the global ecosystem. **Members:** 350,000. **Fees:** Individual, \$20; Family, \$28. **Funding:** Nonprofit, membership-supported. **Annual Revenue:** \$14,576,328. **Usage:** Program services, 67%; Management and General, 10%; Fundraising, 23%. **Volunteer Programs:** Norfolk headquarters only.

21. DEFENDERS OF WILDLIFE

1244 19th St. NW, Washington, DC 20036
(202) 659-9510

Purpose: A national nonprofit organization whose goal is to preserve, enhance and protect the national abundance and diversity of wildlife and preserve the integrity of natural ecosystems. Defenders recognizes the intrinsic value of wildlife, the importance of its humane treatment and the many benefits of wildlife to society. **Current Emphasis:** Protecting and restoring habitats and wildlife communities, reducing environmental hazards to wildlife and promoting wildlife appreciation and education. Specific projects include: restoring the gray wolf to its former range in Yellowstone National Park; preventing entanglement of marine mammals in plastic debris and discarded fish nets; working with Congress to develop a bill to strengthen our National Wildlife Refuge System, and combating the trade of wild caught birds. **Members:** 73,000. **Fees:** Individual, \$20; Students/Seniors, \$15. **Funding:** dnd. **Annual Revenue:** \$4,345,902. **Usage:** Administration, 13%; Membership, 10%; Programs, 64%. **Volunteer Programs:** Defenders has an activist network consisting of more than 6,000 individuals. Volunteers are also welcome to assist staff at national headquarters or at any one of the four regional offices.

22. DUCKS UNLIMITED, INC.

One Waterfowl Way, Long Grove, IL 60647
(708) 438-4300, Fax (708) 438-9236

Purpose: To conserve and enhance wetland ecosystems throughout North America. **Members:** 550,000. **Fees:** \$20. **Annual Revenue:** \$67,000,000. **Usage:** Administration, 3.8%; Fundraising, 17.9%; Programs, 76.3%. **Programs:** Wetland habitat conservation and enhancement projects.

23. EARTH ISLAND INSTITUTE

300 Broadway, Ste. 28
San Francisco, CA 94133
(415) 788-3666, Fax (415) 788-7324

Purpose: To develop innovative projects for the conservation, preservation and restoration of the global environment. **Current Emphasis:** *Earth Island Journal*, the International Marine Mammal Project, the Sea Turtle Restoration Project, Balkal Watch, Urban Habitat Program, and International Green Circle, among others. **Members:** 35,000. **Fees:** Individual, \$25; student, \$15. **Funding:** Members, 55%; Foundation/Donor, 35%. **Annual Revenue:** \$1,300,000. **Volunteer Programs:** Volunteer programs and internships available in most projects.

24. EARTHWATCH

P.O. Box 403N, 680 Mt. Auburn St.
Watertown, MA 02272, (617) 926-8200

Purpose: Sending volunteers to work with scientists around the world who are working to save rainforests and endangered species, preserve archeological finds and study pollution effects. **Current Emphasis:** Working to research and create management plans to help alleviate crucial environmental problems. **Members:** 70,000. **Fees:** \$25. **Funding:** Membership, 80%; Corporation, 10%; Foundation, 10%. **Annual Revenue:** dnd. **Usage:** Administration, 16%; Fundraising, 4%; Programs, 80%. **Volunteer Programs:** Work in 46 countries with scientists from around the world on projects ranging from two to three weeks.

25. ENVIRONMENTAL DATA RESEARCH INSTITUTE

797 Elmwood Ave., Rochester, NY 14620
(716) 473-3090, Fax (716) 473-0968

Purpose: Established in 1989 to provide the environmental community with information on organizations, publications, and funding. EDRI has developed a comprehensive database of environmental grants, which we use to provide detailed custom reports on who's giving money, who's getting it, where it goes, and for what purpose. **Current Emphasis:** Analysis of funding by topic (biodiversity, energy, toxics, etc.), activity (research, advocacy, etc.), geographic region and scope. **Funding:** Foundation/Donor, 100%. **Volunteer Programs:** Some internships are available.

26. ENVIRONMENTAL DEFENSE FUND

257 Park Avenue S., New York, NY 10010
(212) 505-2100

Purpose: To link science, economics and law to create innovative, economically viable solutions to today's environmental problems. **Current Emphasis:** Solid waste management, global climate change, tropical rainforest deforestation and toxin control. **Members:** 200,000. **Fees:** \$20. **Funding:** Membership, 53%; Corporation, 1%; Other, 46%. **Annual Revenue:** \$16,900,000. **Usage:** Administration, 3%; Fundraising, 13%; Programs, 82%. **Volunteer Programs:** Summer internships are available in various departments in all seven offices.

27. FISH AND WILDLIFE REFERENCE SERVICE

5430 Grosvenor Ln., Ste. 110
Bethesda, MD 20814
(301) 492-6403, Fax (301) 230-2250

Purpose: A computerized information retrieval system and clearinghouse providing fish and wildlife management research reports. **Current Emphasis:** Fish and wildlife management and protection of endangered species. **Members:** 9,000. **Fees:** Some user fees. **Annual Revenue:** \$10,000. **Volunteer Programs:** One to five nonpaid interns.

28. FRIENDS OF THE EARTH

218 D St. SE, Washington, DC 20003
(202) 544-2600

Purpose: Global environmental advocates dedicated to the conservation, protection and rational use of the earth. Engaged in lobbying in Washington, DC and various state capitals and disseminating public information on a wide variety of environmental issues. FOE publishes an award-winning magazine, *Friends of the Earth*, and is affiliated with 42 other Friends of the Earth groups around the world. **Current Emphasis:** Ozone depletion, agricultural biotechnology, toxic chemical safety, groundwater protection, nuclear weapons production wastes, oceans and coasts, coal strip-mining abuses, tropical deforestation and various international projects. **Members:** 50,000. **Fees:** Individuals, \$25; Student/low-income/senior, \$15. **Funding:** dnd. **Annual Revenue:** dnd. **Usage:** dnd. **Volunteer Programs:** Internships available.

29. THE FUND FOR ANIMALS

200 W. 57th St., New York, NY 10019.
(212) 246-2096, Fax (212) 246-2633

Purpose: To oppose cruelty to animals—whether wild or domestic—wherever and whenever it occurs and to preserve biodiversity. **Current Emphasis:** To oppose all sport hunting, to limit the breeding of domestic animals, and to preserve rare species and systems. **Members:** 200,000. **Fees:** \$20. **Funding:** Membership, 98%; Foundation/Donor, 2%. **Annual Revenue:** \$1,800,000. **Usage:** Administration, 20%; Fundraising, 10%; Programs, 70%. **Volunteer Programs:** Washington, DC office internships.

30. GRAND CANYON TRUST

1400 16th St. NW, #300, Washington, DC 20036
(202) 797-5429

Purpose: To advocate the preservation and wise management to the natural resources of the Colorado Plateau and the Grand Canyon. **Current Emphasis:** Glen Canyon Dam operations, air pollution in the canyon and Utah Wilderness designation. **Members:** 3,600. **Fees:** \$25. **Funding:** Membership, 65%; Foundation, 35%. **Annual Revenue:** dnd. **Usage:** Administration, 7%; Fundraising, 20%; Programs, 73%.

31. GREATER YELLOWSTONE COALITION

P.O. Box 1874, Bozeman, MT 59771
(406) 586-1593

Purpose: To ensure the preservation and protection of the Greater Yellowstone ecosystem, one of the largest essentially intact ecosystems in the temperate zones of the earth. **Current Emphasis:** Concerned with inappropriate oil and gas development on national forest lands, logging, mining, grazing and excess development. **Members:** 4,000+ individuals, 90 organizations. **Fees:** Basic, \$25; Patron, \$500. **Funding:** Membership, 45%; Corporation, 5%; Foundation, 50%. **Annual Revenue:** \$600,000. **Usage:** Administration, 25%; Fundraising, 13%; Programs, 62%. **Volunteer Programs:** Internships available.

32. GREENPEACE USA

1436 U St. NW, Washington, DC 20009
(202) 462-1177

Purpose: A direct action organization with offices in 24 countries, dedicated to protecting and conserving the environment and the life it supports. **Current Emphasis:** Greenpeace campaigns to stop global warming, ozone depletion, tropical deforestation, international waste trade, nuclear weapons production, and the needless slaughter of marine mammals and endangered animals. Greenpeace also works to reduce toxic and nuclear waste, convert to clean, efficient energy sources, and protect the ocean ecology and Antarctica. The award-winning *Greenpeace* magazine is published on a bimonthly basis. **Members:** 2.3 million. **Fees:** \$15. **Funding:** Supporters, 98%; Corporations, less than 1%; Foundations/Donors, less than 1%. **Annual Revenue:** \$50,000,000. **Usage:** Administration, 4%; Fundraising, 21%; Programs, 75%. **Programs:** Direct Action, education, grassroots organizing and research. Lobbying conducted by sister organization Greenpeace Action. **Volunteer Programs:** Interns and volunteers accepted in most offices.

33. HAWKWATCH INTERNATIONAL, INC.

P.O. Box 35706, 1420 Carlisle NE, Ste. 100
Albuquerque, NM 87176-5706
(505) 255-7622, Fax (505) 268-3331

Purpose: The conservation of birds of prey and their habitats in western United States through research and public education. Supports six field projects to monitor trends and migration patterns of migratory raptors in the Rocky Mountain West. **Current Emphasis:** Standardized counts of migrating raptors at strategic observation points and large-scale capture and banding

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program. **Members:** 2,200. **Fees:** Individual, \$20. Family, \$30. **Funding:** Membership, 50%; Corporation, 10%; Government contracts, 40%. **Annual Revenue:** \$190,000. **Usage:** Administration, 10%; Fundraising, 10%; Programs, 80%. **Volunteer Programs:** Spring and fall research and education internships. Volunteer banders also needed.

34. THE HUMANE SOCIETY OF THE UNITED STATES

2100 L St. NW, Washington, DC 20037
(202) 452-1100

Purpose: Working to prevent cruelty to all living creatures. Mindful that humans have been uniquely endowed with a sense of moral values, the HSUS believes we are responsible for the welfare of those animals that we have domesticated and those upon whose natural environment we encroach. **Current Emphasis:** The Shame of Fur campaign; Be a PAL—Prevent a Litter campaign; marine mammal protection, laboratory animal welfare, The Beautiful Choice campaign. **Members:** 1,187,162. **Annual Revenue:** \$15,142,844. **Volunteer Programs:** Contact your local organization for area activities.

35. INFORM

381 Park Ave. S., New York, NY 10016
(212) 689-4040

Purpose: Environmental research and education organization that identifies and reports on practical actions for the preservation and conservation of natural resources and public health. Current research focuses on such critical environmental issues as hazardous waste reduction, garbage management, urban air quality, and land and water conservation. Approximately six reports published per year. **Current Emphasis:** Chemical hazards prevention, business recycling, and municipal solid waste incineration. **Members:** 1,000. **Fees:** From \$25. **Funding:** Membership, 22%; Corporation, 18%; Other, 60%. **Annual Revenue:** \$1.5 million. **Usage:** Research and education. **Volunteer Programs:** Occasional availability in clerical and communications.

36. INSTITUTE FOR CONSERVATION LEADERSHIP

2000 P St. NW, Ste. 413, Washington, DC 20036
(202) 466-3330, Fax (202) 659-3897

Purpose: We serve the entire conservation/environmental community with leadership training and organizational development programs. We help build volunteer involvement, increase organizational leadership, help establish state networks, and improve individual leadership skills and abilities. Our goal is to increase the number and effectiveness of volunteer organizations and leaders in the entire community. **Current Emphasis:** Week-long, individual training sessions, state networking conferences, board-of-directors training and long-range planning facilitation. **Members:** 1324. **Fees:** None. **Funding:** Foundation/Donor, 90%. **Annual Revenue:** \$270,000,000. **Usage:** Administration, 30%; Fundraising, 10%; Programs, 60%. **Volunteer Programs:** None.

37. INSTITUTE FOR EARTH EDUCATION

P.O. Box 288, Warrenville, IL 60555
(509) 395-2299

Purpose: IEE develops and disseminates educational programs that help people build an understanding of, appreciation for, and harmony with the earth and its life. Through its worldwide network of branches, the Institute conducts workshops, provides a seasonal journal, hosts international and regional conferences, supports local groups, and distributes an annual catalog and publishes books and program materials. **Current Emphasis:** Earth Education program development and support for teachers and leaders. **Members:** 2,000+. **Fees:** Personal, \$20; Professional, \$35; Affiliate, \$50; Sponsor, \$100. **Annual Revenue:** \$300,000+. **Programs:** Program development. **Volunteer Programs:** Available through international sharing centers.

38. INTERNATIONAL FUND FOR ANIMAL WELFARE

411 Main St., Yarmouth Port, MA 02675
(508) 362-4944

Purpose: An international animal welfare organization dedicated to protecting wild and domestic animals from cruelty. **Current Emphasis:** Preservation of harp and hood seals in Canada, dog and cat abuse in the Philippines and South Korea, elephants in Africa, the use of animals in laboratory testing for the cosmetics industry, and whales and other marine mammals around the world. **Members:** 650,000. **Fees:** N/A. **Funding:** Donors. **Annual Revenue:**

\$4,916,491. **Usage:** Expenses equal 108% of donations. Administration, 18%; Fundraising, 17%; Programs, 73%. **Volunteer Programs:** Pilot whale stranding network on Cape Cod for residents of Massachusetts.

39. INTERNATIONAL PRIMATE PROTECTION LEAGUE

P.O. Box 766, Summerville, SC 29484
(803) 871-7988

Purpose: Dedicated to the conservation and protection of apes, monkeys and prosimians, maintenance of a gibbon sanctuary and support of overseas projects. Includes a quarterly newsletter, "THE IPPL Newsletter." **Current Emphasis:** Uncovering illegal trafficking in primates and support of primate sanctuaries overseas. **Members:** 11,500. **Fees:** \$20. **Funding:** Membership, 75%; Corporation, 1%; Other, 24%. **Annual Revenue:** \$250,000. **Usage:** Administration, 20%; Fundraising, 10%; Programs, 70%. **Volunteer Programs:** None.

40. THE JANE GOODALL INSTITUTE

P.O. Box 41720, Tucson, AZ 85717
(602) 325-1211

Membership line, (800) 999-CHIMP

Purpose: Ongoing support and expansion of field research on wild chimpanzees and studies of chimpanzees in captive environments. The Institute is dedicated to publicizing the unique status and needs of chimpanzees to insure their preservation in the wild and their physical and psychological well-being in captivity. **Current Emphasis:** Field research activities at Gombe Stream Research Centre in Tanzania; the Chimpanzee Study of active chimpanzees in zoos of other captive colonies in the US and conservation activities targeting wild and captive chimpanzees, including those in biomedical research laboratories. **Members:** 2,314. **Fees:** From \$25. **Funding:** Membership, 20%; Corporation, 2%; Lecture Tour, 39%; Other, 39%. **Annual Revenue:** \$599,800. **Usage:** Administration, 15%; Fundraising, 15%; Programs, 70%. **Volunteer Programs:** University of Southern California Goodall Fellowship.

41. THE LAND AND WATER FUND OF THE ROCKIES

1405 Arapahoe, Ste. 200, Boulder, CO 80302
(303) 444-1188

Idaho office: P.O. Box 1612, Boise, ID 83701
(208) 345-6942

Purpose: "Legal Aid for the Environment," to provide free legal aid to grassroots environmental groups in Arizona, Colorado, Idaho, Montana, New Mexico, Utah and Wyoming. LAW Fund staff attorneys and a regional network of local volunteer attorneys supply advice and counsel, and will litigate for client groups. Founded 1990. **Current Emphasis:** Public lands, water and toxics, energy efficiency. **Members:** 250. **Fees:** Regular, \$25; Student/senior/limited-income, \$15; Organization, \$100; Special, \$50-\$1,000. **Funding:** Membership, 3%; Other, 1%; Foundation, 96%. **Annual Revenue:** \$450,000. **Usage:** Administration, 25%; Fundraising, 1%; Programs, 74%. **Volunteer Programs:** Pro Bono Attorney Program, "Adopt-A-Forest," opportunities for technical experts.

42. THE LAND TRUST ALLIANCE

900 17th St. NW, Ste. 410
Washington, DC 2006-2596
(202) 785-1410

Purpose: A national organization of local and regional land conservation groups that provides programs and services to help land trusts reach their full potential, fosters public policies supportive of land conservation and builds public awareness of land trusts and their goals. **Current Emphasis:** Providing educational materials and technical assistance for land trusts and other land conservation professionals. **Members:** 700. **Fees:** From \$30. **Funding:** dnd. **Annual Revenue:** \$800,000. **Usage:** Administration, 19%; Fundraising, 10%; Programs, 80%. **Volunteer Programs:** An internship program is available and volunteers are needed by land trusts across the country.

43. LEAGUE TO SAVE LAKE TAHOE

989 Tahoe Keys Blvd., Ste. 6
S. Lake Tahoe, CA 96150, (916) 541-5388

Purpose: Dedicated to preserving the environmental balance, scenic beauty and recreational opportunities of the Lake Tahoe Basin. Subsidiary organizations include League to Save Lake Tahoe Charitable Trust and Lake Tahoe Land Trust. **Current Emphasis:** Reversing the water and air quality decline at Lake Tahoe. **Members:** 3,700. **Fees:** \$35. **Funding:** dnd. **Annual Revenue:** \$250,000. **Usage:** Administration, 54%; Programs, 46%. **Volunteer Programs:** None.

44. LIGHTHAWK

P.O. Box 8163, Santa Fe, NM 87504
(505) 982-9656

Purpose: To use and encourage the advantages of flight to shed light on and correct environmental mismanagement and empower others to do the same. The goal is to greatly enhance humankind's capacity to sustain biological diversity, intact ecosystems and ecological processes that support life on earth. **Current Emphasis:** Working to protect America's national forest system, particularly the last vestiges of our once vast Pacific Northwest rainforests. **Members:** 3,000. **Fees:** \$35, \$100 and up. **Funding:** dnd. **Annual Revenue:** \$800,000. **Usage:** Administration, 10%; Fundraising, 2%; Programs, 88%. **Volunteer Programs:** Volunteer aircraft owner/pilots with at least 1,000 hours flight time in their own aircraft needed.

45. MANOMET BIRD OBSERVATORY

P.O. Box 936, Manomet, MA 02345
(508) 224-6521

Purpose: A center for long-term environmental research and education. MBO's scientific studies improve understanding of wildlife populations and natural systems and foster conservation action throughout the Americas. The education programs provide training in field biology for college students and offer programs and support for science educators in schools. **Current Emphasis:** Ecology and conservation of neotropical migrant land birds, migration ecology and conservation of shorebirds, field techniques workshops for Latin American biologists, conservation and management of North American fisheries, and studies of the effects of oil pollution on wading bird populations. **Members:** 2,500. **Fees:** Regular, \$25; Student, \$15. **Funding:** dnd. **Annual Revenue:** \$1,500,000. **Usage:** Research/education programs. **Volunteer Programs:** Field biology training program and international shorebird survey, among others.

46. NATIONAL ARBOR DAY FOUNDATION

211 N. 12th St., Ste. 501, Lincoln, NE 68508
(402) 474-5655, Fax (402) 474-0820

Purpose: An education organization dedicated to tree planting and conservation. **Current Emphasis:** Programs such as Trees for America, Tree City USA, Conservation Trees, Celebrate Arbor Day and the National Arbor Day Center. **Members:** 1,000,000. **Fees:** \$10. **Funding:** Membership, 61%; Other, 39%. **Annual Revenue:** \$14,700,000. **Usage:** Administration, 1%; Fundraising, 10%; Programs, 89%. **Volunteer Programs:** dnd.

47. NATIONAL ASSOCIATION OF BIOLOGY TEACHERS

11250 Roger Bacon Dr., #19, Reston, VA 22090
(703) 471-1134

Purpose: Dedicated exclusively to the concerns of biology teachers. Publishes *The American Biology Teacher*, a nationally recognized journal which highlights research findings, innovative teaching strategies, laboratory exercises and reviews of publications, computer programs and videos. **Current Emphasis:** Projects underway include middle school teacher training, biotechnology labs and equipment loan programs, alternative use of animals in the classroom and elementary education environmental curriculum. **Members:** 7,000. **Fees:** \$38. **Funding:** Membership, 40%; Other, 60%. **Annual Revenue:** \$700,000. **Usage:** Administration, 33%; Fundraising, 1%; Programs, 66%. **Volunteer Programs:** None.

48. NATIONAL ASSOCIATION OF INTERPRETATION

P.O. Box 1892, Fort Collins, CO 80522
(303) 491-6434

Purpose: A professional organization serving the needs and interests of interpreters employed by agencies and organizations concerned with natural and cultural resources, conservation and management. **Current Emphasis:** Representing all those whose job it is to convey the meanings and relationships between people and

their natural, cultural and recreational world. **Members:** 2,300. **Fees:** Student, \$25, individual, \$40. **Funding:** Membership, 90%; Corporation, 10%. **Annual Revenue:** \$132,000. **Usage:** Administration, 38%; Programs, 62%. **Volunteer Programs:** None.

49. **NATIONAL AUDUBON SOCIETY**
950 Third Ave., New York, NY 10022
(212) 832-3200, Fax (212) 593-6254

Purpose: Audubon is an effective, grassroots environmental organization dedicated to protecting wildlife and its habitats. Our 600,000 members and staff of scientists, lobbyists, lawyers, policy analysts, and educators work through field and policy research, lobbying, litigation, and citizen action to protect and restore various habitats throughout the Americas. **Current Emphasis:** Activism; high-priority campaigns: Ancient Forests, Arctic National Wildlife Refuge, wetlands, Platte River. **Members:** 600,000. **Fees:** \$20. **Funding:** Membership, 30%; Bequests/Contributors, 32%; Other, 38%. **Annual Revenue:** \$37,000,000. **Usage:** Administration, 9%; Fundraising, 8%; Programs, 73%. **Programs:** Wildlife preservation, science and field research, environmental education, membership and publishing, chapter activities. **Volunteer Programs:** Annual Christmas Bird Count and Breeding Bird Census; Audubon Activist Network and involvement through local chapters, and state and regional offices.

50. **NATIONAL AUDUBON SOCIETY EXPEDITION INSTITUTE**
P.O. Box 170, Readfield, ME 04355
(207) 685-3111, Fax (207) 685-4333

Purpose: Graduate, undergraduate and high school education program which offers year-long and semester expeditions providing an alternative to traditional education emphasizing environmental education. Exciting list of courses offered. **Members:** 80-100 per year. **Fees:** Semester, \$6,100; year, \$10,400. **Funding:** Membership, 90%; Foundation/Donor, 10%. **Annual Revenue:** dnd.

51. **NATIONAL COALITION AGAINST THE MISUSE OF PESTICIDES**

701 Edwards St. SW, Ste. 200
Washington, DC 20003, (202) 543-5450

Purpose: To serve as a national network committed to pesticide safety and the adoption of alternative pest management strategies which reduce or eliminate a dependency on toxic chemicals. **Current Emphasis:** To affect change through local action assisting individuals and community-based organizations in this endeavor. **Members:** dnd. **Fees:** \$20. **Funding:** Membership, 33%; Grants, 67%. **Annual Revenue:** dnd. **Usage:** dnd. **Volunteer Programs:** Internships available.

52. **NATIONAL WILDFLOWER RESEARCH CENTER**
2600 FM 973 N., Austin, TX 78725
(512) 929-3600

Purpose: To study North American wildflowers and other native plants with the aim of reestablishing native plants in landscapes, thereby aiding in the repair and beautification of the environment. **Current Emphasis:** Research on wildflowers and native plants, education of the public about their importance in the environment, and promotion of their use in planned landscapes and their conservation. **Members:** 17,000. **Fees:** From \$25. **Fundraising:** dnd. **Annual Revenue:** dnd. **Usage:** dnd. **Volunteer Programs:** Active volunteer program and public relations internship through University of Texas.

53. **NATIONAL WILDLIFE FEDERATION**
1400 16th St. NW, Washington, DC 20036
(202) 797-6800, Fax (202) 797-6646

Purpose: To be the most responsible and effective conservation education association promoting the wise use of natural resources and protection of the global environment. The Federation distributes periodicals and education materials, sponsors outdoor education programs in conservation and litigates environmental disputes in an effort to conserve natural resources and wildlife. **Current Emphasis:** Forests, energy, toxic pollution, environmental quality, biotechnical fisheries and wildlife, wetlands, water resources and public lands. **Members:** 5,600,000. **Fees:** \$15-\$20. **Funding:** Membership, 47%; Educational Materials, 39%, Foundation/Donor, 14%. **Annual Revenue:** \$90,000,000. **Usage:** Administration/Fundraising, 11%; Membership/Development, 21%; Programs, 68%. **Volunteer Programs:** The National Wildlife Federation oversees 51 state and territorial affiliate organizations.

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54. **NATURAL RESOURCES DEFENSE COUNCIL**
40 W. 20th St., New York, NY 10011
(212) 727-2700

Purpose: To protect America's natural resources and improve the quality of the human environment. NRDC combines legal action, scientific research and citizen education in a highly effective environmental protection program. **Current Emphasis:** Major accomplishments have been in the area of energy policy and nuclear safety, air and water pollution, urban transportation issues, pesticides and toxic substances, forest protection, global warming and the international environment. **Members:** 170,000. **Fees:** \$10. **Funding:** Membership, 50%; Foundation/Grants, 50%. **Annual Revenue:** \$16,000,000. **Usage:** Administration, 10%; Fundraising, 16%; Programs, 74%. **Volunteer Programs:** Legal internships as well as internships for graduate and undergraduate college students in several offices.

55. **THE NATURE CONSERVANCY**
1815 N. Lynn St.
Arlington, VA 22209
(703) 841-5300

Purpose: International organization committed to preserving biological diversity by protecting lands and the plants and animals that live there. Manages a system of over 1,100 nature sanctuaries. **Current Emphasis:** Land protection in 50 states in US and 12 countries in Latin America. **Members:** 550,000. **Fees:** \$15. **Funding:** Membership, 70%; Corporation, 9.6%; Foundation, 20.4%. **Annual Revenue:** \$168,554,000. **Usage:** Administration, 7.9%; Fundraising, 8%; Programs, 80.3%; Other, 3.8%. **Volunteer Programs:** Positions available. Call (800) 628-6860 for information.

56. **NORTH AMERICAN NATIVE FISHES ASSOCIATION**
123 W. Mt. Airy Ave.
Philadelphia, PA 19119
(215) 247-0384

Purpose: To bring together people interested in fishes native to this continent for scientific purposes or aquarium study; to encourage increased scientific appreciation and conservation of native fishes through observation, study and research; to assemble and distribute information about native fishes. **Current Emphasis:** dnd. **Members:** 400. **Fees:** \$11-\$15. **Funding:** dnd. **Annual Revenue:** dnd. **Volunteer Programs:** None.

57. **NORTHERN ALASKA ENVIRONMENTAL CENTER**
218 Driveway, Fairbanks, AK 99701
(907) 452-5021

Purpose: Dedicated to the protection of the quality of the Alaskan environment through action and education. NAEC covers areas north of the Alaska Range and works closely with government agencies on land-use issues such as the Arctic National Wildlife Refuge, implementation of the Alaska Lands Act, ANWR, oil and gas leasing, and placer goldmining. **Current Emphasis:** Wilderness designation for the coastal plan of ANWR and arctic development issues. **Members:** 750. **Fees:** Individual, \$25; Family, \$35. **Funding:** Membership, 55%; Grants, 30%; Events, 15%. **Annual Revenue:** \$90,000. **Usage:** Administration, 17%; Fundraising, 11%; Programs, 72%. **Volunteer Programs:** Opportunities for research internships and a wide variety of volunteer programs.

58. **NUCLEAR INFORMATION AND RESOURCE SERVICE**

1424 16th St. NW, Ste. 601
Washington, DC 20036, (202) 328-0002

Purpose: To serve as a networking and information clearinghouse for environmental activists concerned with nuclear power and waste issues; to provide citizens with the information and tools necessary to challenge nuclear facilities and policies; to work for increased energy efficiency and toward a sustainable, renewable energy future. **Current Emphasis:** Stopping deregulation of radioactive waste, publishing an energy audit manual for towns and universities, and working to prevent a new generation of nuclear reactors. **Members:** 1,200. **Fees:** \$20. **Funding:** Membership, 20%; Foundation/Donor, 80%. **Annual**

Revenue: \$275,000. **Usage:** Administration, 12%; Fundraising, 5%; Programs, 83%. **Volunteer Programs:** Intern applications accepted year-round and \$100/week stipend offered.

59. **PACIFIC WHALE FOUNDATION**
101 N. Kihei Rd., Kihei, HI 96753
(808) 879-8860 or (800) WHALE-11

Purpose: The scientific study of the ocean and its marine mammal inhabitants; the application of research findings to the preservation of the marine environment; education and conservation programs to enhance ecological awareness. **Current Emphasis:** Conducting field research worldwide and assisting government and non-government agencies in developing conservation policies and plans for endangered marine life. **Members:** 5,000. **Fees:** Student, \$15; Individual, \$20; Family, \$25; Foreign, \$30; Institution, \$50; Contributing, \$100; Patron, \$500. **Funding:** Membership, 50%; Programs, 50%. **Annual Revenue:** \$700,000. **Usage:** Administration/Fundraising, 25%; Programs, 75%. **Volunteer Programs:** Ocean Outreach Docents and marine debris cleanup fundraising.

60. **POPULATION CRISIS COMMITTEE**
1120 19th St. NW, #550
Washington, DC 20036
(202) 659-1833, Fax (202) 293-1795

Purpose: To stimulate public awareness, understanding and action toward reducing population growth rates. Advocates universal and voluntary access to family planning services to achieve world population stabilization. **Current Emphasis:** Relationship between population growth and environmental degradation, contraceptive availability. **Annual Revenue:** \$4,000,000. **Usage:** Administration, 9%; Fundraising, 5%; Programs, 86%. **Programs:** Publications and public information, research and analysis, project support.

61. **POPULATION-ENVIRONMENT BALANCE**

1325 G St. NW, Ste. 1003
Washington, DC 20005
(202) 879-3000, Fax (202) 879-3019

Purpose: A national, nonprofit membership organization dedicated to education and advocacy of measures which would encourage population stabilization in the United States, in order to safeguard our environment. **Current Emphasis:** Environmental protection, birth control availability/research, local growth control, and immigration policy. **Members:** 5,000. **Fees:** \$25. **Funding:** Membership, 35%; Foundation/Donor, 65%. **Annual Revenue:** \$650,000. **Usage:** Administration, 25%; Fundraising, 10%; Programs 65%. **Programs:** Public education and outreach. **Volunteer Programs:** Volunteer positions regularly available.

62. **RAILS-TO-TRAILS CONSERVANCY**
1400 16th St. NW, Ste. 300
Washington, DC 20036
(202) 797-5400

Purpose: Converting thousands of miles of abandoned railroad corridors to public trails for walking, bicycling, horseback riding, cross-country skiing, wildlife habitat and nature appreciation. **Current Emphasis:** Linking major metropolitan areas via rail-trails and established greenways. **Members:** 50,000. **Fees:** \$18. **Funding:** Membership, 44.4%; Grants, 47.6%; Other, 8%. **Annual Revenue:** \$1,544,293. **Usage:** Administration, 1.3%; Fundraising, 9.8%; Programs, 75.5%; Membership Services, 13.4%. **Volunteer Programs:** Six-month paid internships are available at the national office in Washington and volunteers can serve at chapter offices and on specific projects.

63. **RAINFOREST ACTION NETWORK**
301 Broadway, Ste. A, San Francisco, CA 94133
(415) 398-4404

Purpose: Nonprofit activist organization working to save the world's rainforests. Works internationally in cooperation with other environmental and human rights organizations on major campaigns to protect rainforests. **Current Emphasis:** Protecting rainforests in Hawaii, Amazonia and Southeast Asia. **Members:** 31,000. **Fees:** \$15 minimum. **Funding:** Membership, 70%; Corporation, 20%; Foundation/Donor, 10%. **Annual Revenue:** dnd. **Usage:** Administration, 15%; Fundraising, 10%; Programs, 75%. **Volunteer Programs:** Internship program is available and volunteers are needed in all locations.

64. **RAINFOREST ALLIANCE**
270 Lafayette, #512, New York, NY 10012
(212) 941-1900, Fax (212) 941-4986

Purpose: Dedicated to the conservation of the world's tropical forests, the Rainforest Alliance's primary

mission is to develop and promote sound alternatives to the activities that cause tropical deforestation—opportunities for people to utilize tropical forests without destroying them. We are also involved in public education and building new constituencies for conservation. **Current Emphasis:** Timber project (including "Smart Wood" certification); Periwinkle Project (medicinal plant information); Tropical Conservation Newsbureau; Kleinhans Fellowship for Tropical Agroforestry; Edelstein Fellowship for Medicinal Plant Research in Brazil; Committee for Conservation and Higher Education. **Members:** 15,000. **Fees:** \$20. **Funding:** Membership, 20%; Corporation, 15%; Foundation/Donor, 65%. **Annual Revenue:** \$900,000. **Usage:** Administration, 9%; Fundraising, 11%; Programs, 80%. **Volunteer Programs:** Variety of programs.

65. **RARE CENTER FOR TROPICAL BIRD CONSERVATION**

1529 Walnut St., 3rd Floor
Philadelphia, PA 19102
(215) 568-0420, Fax (215) 568-0561

Purpose: RARE Center is a small organization doing innovative work to preserve threatened habitats and ecosystems in Latin America and the Caribbean. RARE focuses on endangered birds because of their value as environmental indicators and rallying points for conservation initiatives. **Current Emphasis:** Conservation education and applied research. **Members:** 1,000. **Fees:** \$30. **Funding:** Membership, 40%; Foundation/Donor, 60%. **Annual Revenue:** \$300,000. **Usage:** Administration, 20%; Fundraising, 15%; Programs, 65%. **Volunteer Programs:** Occasionally.

66. **THE RENE DUBOS CENTER FOR HUMAN ENVIRONMENTS, INC.**

100 E. 85th St.
New York, NY 10028
(212) 249-7745

Purpose: An independent, education and research organization founded by the eminent scientist/humanist Rene Dubos to focus on the humanistic and social aspects of environmental problems. The Center's mission is to develop creative policies for the resolution of environmental conflicts and to help decision-makers and the general public formulate new environmental values. **Current Emphasis:** Forums and related activities on integrating waste management; education programs for teacher trainers and business/industry on environmental quality and responsibility for "The Decade of Environmental Literacy."

67. **RENEW AMERICA**

1400 16th St. NW, #710, Washington, DC 20036
(202) 232-2252

Purpose: Dedicated to the development of a safe and sustainable environment, Renew America provides information and recommendations to policy makers, media and other environmental organizations. **Current Emphasis:** "Searching for Success" is an identification, verification and awards program honoring those working to solve environmental problems. Renew America catalogs and promotes environmental success stories to be used as models throughout the country. **Members:** 7,000. **Fees:** \$25. **Funding:** Membership/Corporation, 22%; Foundation/Donor, 73%; Publication, 5%. **Annual Revenue:** \$1,000,000. **Usage:** Administration, 23%; Membership, 22%; Programs, 44%; Reports, 11%. **Volunteer Programs:** Internship positions available.

68. **RHINO RESCUE USA, INC.**

1150 17th St. NW, Ste. 400
Washington, DC 20036
(202) 293-5305

Purpose: To save the rhinoceros from extinction by funding rhino sanctuaries and research, organizing congressional hearings and working with the US State Department and international experts to try to end the illegal trade in rhino horn. **Current Emphasis:** Funding rhinoceros sanctuaries and the research needed to effectively manage and increase remaining rhino populations. **Funding:** Individual donors and foundations. **Annual Revenue:** \$22,000. **Usage:** Administration/Fundraising, 15%; Programs, 85%. **Volunteer Programs:** Contact the above address if interested in fundraising in your local area.

69. **THE RUFFED GROUSE SOCIETY**

451 McCormick Rd.
Coraopolis, PA 15108
(412) 262-4044

Purpose: Dedicated to improving the environment for ruffed grouse, American woodcock and other forest wildlife. **Current Emphasis:** Direct assistance in

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cooperation with land managers in creating and improving young-forest habitat on public lands. **Members:** 25,000. **Fees:** \$20. **Funding:** Membership, 42%; Banquet, 52%. **Annual Revenue:** \$1,500,000. **Usage:** Administration/Fundraising, 20%; Programs, 80%. **Volunteer Programs:** Assisting with local banquets and chapters.

70. **SAVE THE DUNES COUNCIL, INC.**

444 Barker Rd., Michigan City, IN 46360
(219) 879-3937

Purpose: Preservation and protection of the Indiana Dunes for public use and enjoyment by working for the control of air, water and waste pollution affecting the National Lakeshore and Northwest Indiana Area. Involved in shoreline erosion and shoreline; policy issues affecting the Indiana Lake Michigan shoreline, wetlands preservation and groundwater protection. **Current Emphasis:** Water and air pollution, wetlands, shoreline management, parkland purchase and planning and development issues affecting the Indiana Dunes National Lakeshore. **Members:** 1,800. **Fees:** Senior, \$10; Couple, \$30; Life, \$500. **Funding:** Membership, 80%; Other, 20%. **Annual Revenue:** \$25,000. **Usage:** Fundraising, 1%; Programs, 99%. **Volunteer Programs:** Volunteers operate the Dunes Shop, whose revenue supports the Council.

71. **SAVE-THE-REDWOODS LEAGUE**

114 Sansome St., Room 605
San Francisco, CA 94104
(415) 362-2352, Fax (415) 362-7017

Purpose: To purchase Redwood groves and watershed lands for protection in public parks; to support reforestation, research and educational programs. **Members:** 50,000. **Fees:** \$10. **Funding:** Membership, 100%. **Annual Revenue:** \$2,000,000. **Usage:** Programs, 100%. **Volunteer Programs:** None.

72. **SAVE THE WHALES, INC.**

1426 Main St., Unit E, P.O. Box 2397
Venice, CA 90291, (213) 392-6226

Purpose: To educate children and adults about marine mammals, their environment and their preservation. Save the Whales is beginning educational programs via a mobile unit (Whales on Wheels) which will bring lectures and hands-on materials to schoolchildren. **Current Emphasis:** Education through our newsletters (four times per year), lectures, and letter-writing campaigns. **Members:** 800. **Fees:** Adults, \$15; Children, \$10; Classroom, \$30.

73. **SCENIC AMERICA**

216 7th St. SE, Washington, DC 20003
(202) 546-1100

Purpose: To protect America's scenic landscapes and clean up visual pollution. Provides information and technical assistance on billboard and sign control, scenic areas preservation, growth management and all forms of aesthetic regulation. **Current Emphasis:** Visual pollution, scenic highways and billboard control. **Members:** 5,000. **Fees:** dnd. **Funding:** Membership, 20%; Corporation, 20%; Other, 60%. **Annual Revenue:** \$300,000. **Usage:** Administration, 10%; Fundraising, 10%; Programs, 80%. **Volunteer Programs:** Internships in environmental journalism, political organizing and land-use regulation.

74. **SEA SHEPHERD CONSERVATION**

P.O. Box 7000-S, Redondo Beach, CA 90277
(213) 373-6979

Purpose: To protect marine animals and marine habitats. **Current Emphasis:** Prevention of killing of dolphins by the tuna industry in the tropic Pacific; protecting pilot whales in the Faroe Islands; enforcing a moratorium on whaling, rescue of whales and marine mammals in distress and opposing the capture of dolphins in the Gulf of Mississippi. **Members:** 20,000. **Fees:** Donations. **Funding:** Membership, 100%. **Annual Revenue:** \$500,000. **Usage:** Programs, 100%. **Volunteer Programs:** Sea Shepherd is entirely a volunteer organization.

75. **SIERRA CLUB**

730 Polk St., San Francisco, CA 94109

(415) 776-2211

Purpose: To promote conservation of the natural environment by influencing public policy decisions—legislative, administrative, legal, and electoral. To practice and promote the responsible use of the earth's ecosystems and resources and to educate and enlist humanity to protect and restore the quality of the natural and human environment. **Current Emphasis:** Old-growth forests protection; global warming/auto fuel efficiency/energy policy; Arctic National Wildlife Refuge protection; Bureau of Land Management wilderness/desert/national parks protection; toxic waste regulations; International Development lending; tropical forest preservation. **Members:** 648,000. **Fees:** Individual, \$35; Student/Senior, \$15. **Funding:** Membership, 35%; Contributions, 32%; Other, 33%. **Annual Revenue:** \$40,659,100. **Usage:** Fundraising, 8%; Membership, 12%; Chapter Allocations, 6%; Programs, 74%. **Volunteer Programs:** Extensive opportunities available throughout the country.

76. **SOIL AND WATER CONSERVATION SOCIETY**

7515 NE Ankeny Rd., Ankeny, IA 50021-9764
(515) 289-2331, (515) 289-1227

Purpose: The mission of the Soil and Water Conservation Society is to advocate the conservation of soil, water and related natural resources. **Members:** 12,000. **Fees:** First-time, \$30; Regular, \$44. **Funding:** Membership, 32%; Corporation, 1%; Foundation/Donor, 20%. **Volunteer Programs:** Journalism intern, public affairs specialist intern, Soil Conservation Service - Earth Team.

77. **STUDENT CONSERVATION ASSOCIATION, INC.**

P.O. Box 550, Charlestown, NH 03603
(603) 826-4301, Fax (603) 826-7755

Purpose: Since 1957 SCA has provided educational opportunities for student and adult volunteers to assist with the stewardship of our public lands and natural resources while gaining experience that enhances career directions or personal goals. Volunteers serve in national parks, national forests, wildlife refuges, and other public or private conservation areas nationwide. **Current Emphasis:** Volunteer assistance for ecological restoration; strengthening support for SCA volunteers and other youth (especially minorities) interested in conservation careers; publishing *Earth Work*, a magazine for and about current and future conservation professionals. **Members:** 12,000. **Fees:** \$15 and up. **Funding:** Membership, 20%; Corporation, 4%; Foundation/Donor, 12%. **Annual Revenue:** \$3.8 million. **Usage:** Administration, 19%; Fundraising, 14%; Programs, 65%. **Volunteer Programs:** The heart of SCA's activity is two volunteer programs: Resource Assistant Program (year-round) for college students/other adults, and the High School Program (summer) for students 16-18. No fee; most expenses paid; 1,500 openings per year. Listings and applications available.

78. **UNION OF CONCERNED SCIENTISTS**

26 Church St., Cambridge, MA 02238
(617) 547-5552, Fax (617) 864-9405

Purpose: The Union of Concerned Scientists is an independent nonprofit organization of scientists and other citizens concerned about the impact of advanced technology on society. UCS's programs run on two tracks—energy and arms. **Current Emphasis:** The energy program focuses on global warming, national energy policy, renewable energy, transportation, and nuclear power/safety. **Members:** 90,000. **Funding:** Membership, 80%; Foundation, 20%. **Annual Revenue:** \$3,300,000. **Usage:** Administration, 3%; Fundraising and Sponsor communications, 23%. Programs: Energy and environmental programs, 41%; Nuclear Arms Program, 22%; Legislative Program, 11%. **Volunteer Programs:** Three- to five-month paid internships are available in both the Cambridge and Washington, DC, offices. Many volunteer opportunities are available as part of the Scientists Action Network.

79. **UNIVERSITY RESEARCH EXPEDITIONS PROGRAM**

University of California, Berkeley, CA 94720
(415) 642-6586, Fax (415) 643-8683

Purpose: To promote public involvement in ongoing worldwide scientific research and educational activities in the environmental, natural and social sciences. **Current Emphasis:** Projects in cooperation with scientists from developing nations, focused on preserving the earth's resources and improving people's lives. **Members:** 400 participants per year. **Fees:** Participants make a tax-deductible donation to the university to support the research and cover their expenses. Pro-

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grams: Field research projects in the natural and social sciences; teacher development; student scholarships.
Volunteer Programs: Volunteer participants needed from all walks of life to serve 2 to 3 weeks as field assistants on research teams.

80. WILD CANID SURVIVAL AND RESEARCH CENTER/WOLF SANCTUARY P.O. Box 760, Eureka, MO 63025 (314) 938-5900

Purpose: Environmental education. Captive breeding of the endangered red and Mexican wolves for the purpose of reintroduction into the wild. **Current Emphasis:** Providing as much breeding space as possible for the rare Mexican gray wolf. **Members:** 2,800. **Fees:** From \$25 up. **Funding:** Membership, 80%; Corporation, 10%; Foundation/Donor, 10%. **Annual Revenue:** \$98,000. **Volunteer Programs:** Volunteers assist with fundraising, educational programs and administration.

81. THE WILDERNESS SOCIETY 900 17th St., Washington, DC 20006 (202) 833-2300

Purpose: Protecting wildlands and wildlife; safeguarding the integrity of our federal public lands, national forests, wildlife refuges, national seashores, recreation areas and public domain lands. **Current Emphasis:** Arctic wildlife refuge, national forest policy, national parks and ecosystem management and the economics of public land use. **Members:** 400,000. **Fees:** New, \$15; Renewal, \$30. **Funding:** Membership, 50%; Grants, 16%; Foundation, 16%; Other, 18%. **Annual Revenue:** \$10,932,448. **Usage:** Administration, 10%; Fundraising, 6%; Programs, 72%; Recruiting, 12%. **Volunteer Programs:** None.

82. WILDLIFE CONSERVATION INTERNATIONAL Division of the New York Zoological Society Bronx, NY 10460 (212) 220-6891, Fax (212) 364-7963

Purpose: To help preserve the earth's biological diversity and valuable ecosystems. With 122 projects in 46 countries, WCI addresses conflicts between humans and wildlife and explores locally sustainable solutions. **Current Emphasis:** Tropical rainforests; African elephant and rhino. Tibetan plateau and conservation training. **Members:** 60,000. **Fees:** \$25. **Funding:** Membership, 60%; Corporation, 10%; Foundation/Donor, 30%. **Annual Revenue:** \$4,500,000. **Usage:** Administration, 5%; Programs, 95%. **Volunteer Programs:** Grants for graduate students and professionals in wildlife sciences upon proposal submission.

83. THE WILDLIFE SOCIETY 5410 Grosvenor Lane, Bethesda, MD 20814 (301) 897-9770, Fax (301) 530-2471

Purpose: The Wildlife Society is a nonprofit, scientific and educational organization dedicated to conserving and sustaining wildlife productivity and diversity through resource management and to enhancing the scientific and technical capability and performance of

wildlife professionals. **Current Emphasis:** Providing current scientific and management information on wildlife resources and enhancing the professionalism of wildlife managers. **Members:** 8,900. **Fees:** From \$33; Students from \$17. **Funding:** Membership, 37%; Publications, 42%; Contributions, 4%; Other, 17%. **Annual Revenue:** \$900,000. **Usage:** Administration, 8%; Fundraising, 1%; Member Services, 24%; Programs, 67%. **Programs:** Publishing scientific journals and books, providing certification and professional development programs, sponsoring meetings and workshops, enhancing wildlife curricula at colleges and universities, providing policy makers with scientific information on wildlife conservation issues, and promoting international wildlife conservation. **Volunteer Programs:** A 3- to 6-month wildlife policy internship program with stipend is available.

84. WORLD RESOURCES INSTITUTE 1709 New York Ave. NW, Ste. 700 Washington, DC 20006 (202) 638-6300, Fax (202) 638-0036

Purpose: A research and policy institute helping governments, the private sector, environmental and development organizations and others address a fundamental question: How can societies meet human needs and nurture economic growth while preserving the natural resources and environmental integrity on which life and economic vitality ultimately depend? **Current Emphasis:** Forests, biodiversity, economics, technology, institutions, climate, energy, pollution, resource and environmental information, governance. **Members:** Not a membership organization. **Funding:** Private foundations, governmental and intergovernmental institutions.

85. WORLD SOCIETY FOR THE PROTECTION OF ANIMALS 29 Perkins St., P.O. Box 190, Boston, MA 02130 (617) 522-7077, Fax (617) 522-7077

Purpose: International animal protection/wildlife conservation organization working primarily in less-developed countries where animal protection societies are nonexistent or ineffective to prevent animal suffering worldwide. WSPA is the only international animal protection organization with consultative status with the UN. **Current Emphasis:** To enact animal protection legislation; humane education programs; anti-fur activities; animal spectacles; humane transport and slaughter of livestock; Disaster Relief Program to aid animal victims of natural and manmade disaster anywhere in the world. **Members:** 10,000/US. **Fees:** \$20. **Funding:**

Individual, 50%; Foundation/corporation, 6%; Bequests, 28%. **Annual Revenue:** \$630,000. **Usage:** Administration, 39.8%; Fundraising, 5.5%; Programs, 54.7%. **Volunteer Programs:** Occasional.

86. WORLD WILDLIFE FUND 1250 24th St. NW, Washington, DC 20037 (202) 293-4800

Purpose: Working worldwide to preserve endangered wildlife and wildlands by encouraging sustainable development and the preservation of biodiversity, particularly in the tropical forests of Latin America, Africa and Asia. **Current Emphasis:** Conservation of tropical rainforests, preserving biological diversity. **Members:** 1,000,000. **Fees:** \$15. **Funding:** Membership, 62%; Corporations, 2%; Other, 36%. **Annual Revenue:** dnd. **Usage:** Administration/Fundraising, 15%; Programs, 85%.

87. XERCES SOCIETY 10 SW Ash St., Portland, OR 97204 (503) 222-2788, Fax (503) 222-2763

Purpose: Working globally to prevent human-caused extinctions of rare invertebrate populations and their habitats. The Society is committed to protecting invertebrates as the major component of biological diversity. Because invertebrates sustain biological systems, invertebrate conservation means preserving ecosystems and ecological functions as well as individual species. **Current Emphasis:** Conservation science for reserve design in Madagascar and Jamaica; in-country conservation training and public education; public policy initiatives protecting invertebrates; protecting Pacific NW old-growth forests. **Members:** 2,400. **Fees:** \$25 to \$40. **Funding:** Membership, 37%; Corporation, 7%; Foundation/Donor, 56%. **Annual Revenue:** \$200,000. **Volunteer Programs:** Internships in conservation science, conservation techniques and fundraising for foreign nationals only.

88. ZERO POPULATION GROWTH 1400 16th St. NW, Ste. 320 Washington, DC 20036, (202) 332-2200

Purpose: To achieve a sustainable balance between the earth's population, its environment and its resources. Primary activities include publishing newsletters and research reports, developing in-school population education programs and coordinating local and national citizen action efforts. **Current Emphasis:** Urbanization and local growth issues, global warming, sustainability, transportation, family planning and other key population concerns. **Members:** 40,000. **Fees:** Student/senior, \$10; Individual, \$20. **Funding:** Membership, 80%; Foundation/Grants, 20%. **Annual Revenue:** \$1,300,000. **Usage:** Administration, 11.6%; Fundraising, 5.7%; Programs, 82.7%. **Volunteer Programs:** Action Alert Network, Roving Reporter, Growth-busters.

The 1991 Directory to Environmental Organizations was compiled by Ann Carey and Nicole Pressly.

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UNDERWATER NATURALIST—The quarterly bulletin of the American Littoral Society, a national coastal conservation organization. Articles, field notes, book reviews on such topics as wetlands, estuarine water quality, underwater photography, sharks, coral reefs, beaches. Subscription included in individual/family annual dues. Lots of membership activities. 4 issues (including American Littoral Society membership): \$25. Sample: free.

1



HAVE YOU HEARD? is a humorous, "short takes" newsletter, focusing on US population and environmental issues. Published quarterly by Population-Environment Balance, its readership is 10,000. 4 issues (includes Population-Environment Balance membership and several other publications): \$25. Sample: free.

2



WILDLIFE ART NEWS—The leading magazine of wildlife art explores the world of animals, birds and habitat with nearly 200 pages of full color "National Geographic quality" reproductions each issue. Informative columns provide an education and a wealth of information on current issues affecting wildlife and art. Includes interviews with old masters and today's leading artists. 6 issues: \$27. Sample: \$6.

3



EARTH ISLAND JOURNAL, the award-winning environmental journal from David Brower's Earth Island Institute, delivers "local news from around the world." Eyewitness accounts from the environmental frontlines—from Malaysia to Moscow—with global econews and exposés you'll find nowhere else. 4 issues (includes Earth Island Institute membership): \$25. Sample: \$3.

4



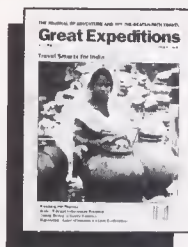
THE GREEN CONSUMER LETTER is the authoritative, independent voice of environmentally safe shopping, written by Joel Makower, author of *The Green Consumer*. Full of investigations, product and company information, resources, trends, insight, inspiration, money- and earth-saving tips. "Innovative, irreverent," —*Los Angeles Times*. 12 issues: \$27. Sample: \$3.

5



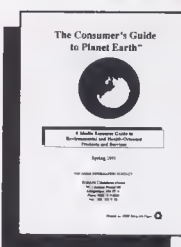
SOLAR TODAY is your bimonthly guide to what's new in solar energy and energy conservation. Published by the American Solar Energy Society, articles include actual case studies as well as reviews of different technologies. 6 issues: \$25. Sample: \$2.

6



GREAT EXPEDITIONS includes articles on budget travel, trekking and socially-responsible tourism in Asia, Africa, Latin America. Hard-to-find information on destinations and cultures untouched by mass tourism. Subscribers receive free travel companion ads, free use of an information exchange and a free booklet on money-saving travel tips. 5 issues: \$18. **Sample: free.**

7



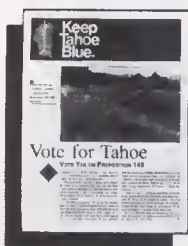
THE CONSUMER'S GUIDE TO PLANET EARTH is an information-packed resource book that lists sources for earth-friendly products and services including adventure/ecotravel, organic foods, mail order catalogs, household and gardening products, personal care products, solar energy, natural pet products and much more. Published biannually; single copies sold only. **Sample: \$7.**

8



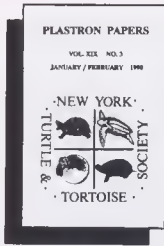
FOREST & CONSERVATION HISTORY, published quarterly since 1957, features original articles, essays on new trends, and timely book reviews as well as reports of new research. It is published by the Forest History Society, an organization of scholars, foresters, industrialists, conservationists and scientists who appreciate the significance of our forest heritage. 4 issues: \$25. **Sample: \$5.**

9



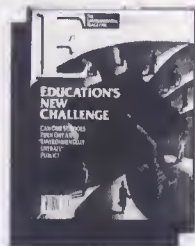
KEEP TAHOE BLUE will keep you informed on efforts to protect Lake Tahoe's incomparable beauty from ever-present threats of degradation. It is published quarterly by the League to Save Lake Tahoe. 4 issues (includes League membership): \$35. **Sample: free.**

10



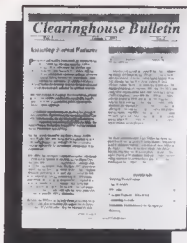
Turtles need your help. Written for both the professional and layperson, **PLASTRON PAPERS** covers the worldwide effort to save them, reports on recent scientific advances and provides tips on their captive care and breeding. 4 issues (includes other publications and membership in The New York Turtle & Tortoise Society): \$15. **Sample: \$2.**

11



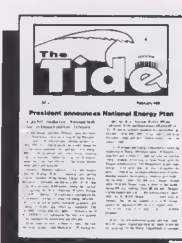
E MAGAZINE is America's only not-for-profit independent environmental magazine. E is a "clearinghouse" of news, information and commentary on key environmental issues and concerns, emphasizing what you can do to help the planet. Winner in 1990 of the Alternative Press Award for "Best New Magazine," as well as an "Ozzie" award for design excellence. 6 issues: \$20. **Sample: \$3.**

12



CLEARINGHOUSE BULLETIN provides activists with essential information on environmental, population and resource issues, and the linkages among them from a carrying capacity perspective. It highlights the efforts of scores of organizations dealing with these issues. The bulletin is a publication of Carrying Capacity Network. 6 issues (includes Network participation and Clearinghouse services): \$35/individual, \$50-\$80/organizations. **Sample: free.**

13



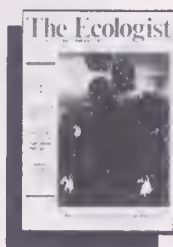
THE TIDE tells you what's going on in Congress, shows you how your representatives are voting and gives you letters addressed to your representatives in Washington. Our introductory copy includes four sample letters and explains how The Tide always gives you letters expressing your opinion on important legislation. 12 issues: \$24. **Sample: free.**

14



DEFENDERS is the bimonthly magazine of Defenders of Wildlife, providing provocative, in-depth coverage of major US and foreign wildlife conservation issues. It is beautifully illustrated with outstanding color photography. 6 issues (includes Defenders of Wildlife membership): \$20. **Sample: \$3.**

15



THE ECOLOGIST is one of the most relevant, influential, and radical of the international green journals. For twenty years it has provided a forum for the social and environmental activists who are seeking to change current development policies in both the "developing" and the "developed" worlds. Distributed in North America by the MIT Press. 6 issues: \$25/student, \$30/individual, \$65/institution. **Sample: \$6.**

16



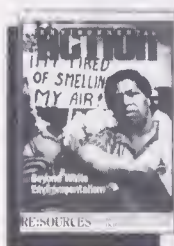
SAFE HOME DIGEST is dedicated to helping people improve their home environment. We research and report on the latest safe and healthful building products, interior design, in-home testing kits, alternative paints and finishes, low-toxic cleaning products, "green" auto care and more. 12 issues (including Index, and Directory to Healthy Products and Suppliers): \$27.96. **Sample: free.**

17



BUT SOME TRADITIONS DIE HARD. Join us in our fight to end the exploitation of animals in research, testing and education, and find out why the use of animals in experiments is scientifically unsound as well as ethically objectionable. 11 issues (including membership to the Anti-Vivisection Society): \$10. **Sample: free.**

18



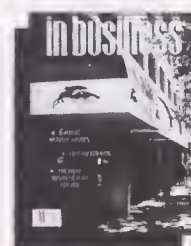
ENVIRONMENTAL ACTION was founded in 1970 by the organizers of the first Earth Day. Today, our bimonthly magazine still sets a standard for environmental reporting and service journalism. News, reviews and resources for activist and armchair readers alike. 6 issues (includes 1-year Environmental Action membership): \$25. **Sample: \$1.**

19



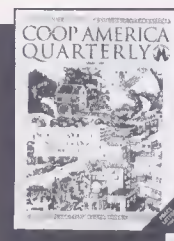
NATIONAL PARKS is a bimonthly magazine dedicated exclusively to America's national parks. Through spectacular photography and incisive writing, the magazine explores the entire National Parks System, from great natural parks and historical areas to wildlife activities and critical conservation issues. 6 issues: \$25. **Sample: free.**

20



IN BUSINESS—the best source of information on starting and developing a "green" enterprise that yields great environmental benefits. Every issue reports on ecoentrepreneurs who are bringing new products and services into the marketplace—in fields like alternative energy, healthy housing, organic foods, waste recycling, etc. Published bimonthly since 1979. 6 issues: \$18. **Sample: \$4.**

21



CO-OP AMERICA QUARTERLY covers positive alternatives and practical strategies for creating a more just and sustainable society. Subjects recently covered include a sustainable energy policy, alternatives to the GNP, and community-supported agriculture. Each issue contains information on environmental investing, green consumers and the Boycott Action News, a newsletter of boycott updates. 4 issues (includes Co-op America membership): \$20. **Sample: \$2.**

22



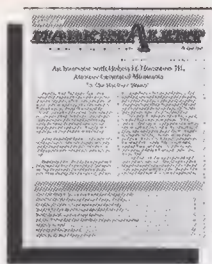
BEAR NEWS is what you should be reading if you're concerned about the fate of the world's eight species of bears and the ecosystems they inhabit. Our quarterly tabloid, praised by wildlife biologists and conservationists, keeps you up-to-date on events that threaten bear survival. Anecdotes, analysis, impassioned advocacy, investigative reporting, sound biology. 4 issues (including membership in the Great Bear Foundation): \$20. **Sample: \$3.**

23



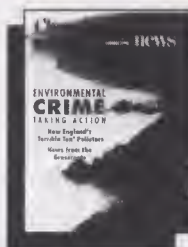
EARTHWORK, a new magazine for and about conservation professionals, activists and job seekers, keeps your conservation "network" humming. Incorporates JOB SCAN, a nationwide listing of natural resource/environmental jobs. News, interviews and colorful photo essays explore conservation career trends and personalities from CEO to ranger. 12 issues: \$29.95. **Sample: \$6.**

24



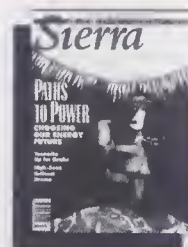
GREEN MARKETALERT tracks the business impacts of green consumerism. Covers corporate strategies, regulation, marketing/advertising, green consumer surveys, products/packaging, international developments and more. Also provides resources for implementing green business strategies. 12 issues: \$295 (standard rate), \$145 for non-profits, small businesses (under \$1 million annual revenue) and consumers. **Sample: \$5.**

25



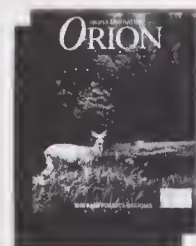
CLEAN WATER ACTION NEWS is a quarterly magazine covering water and toxics issues from a "grassroots" perspective. Each issue includes local reports from around the country, updates on national legislation and campaigns, special features and "what you can do" information. 4 issues: \$24. **Sample: free.**

26



SIERRA is the award-winning magazine of the Sierra Club. Beautiful color photography and lively responsible editorials inform you about today's environmental issues. Reaffirm your commitment to protecting wilderness and parklands and capture the excitement of outdoor adventure. 6 issues (includes one-year membership to Sierra Club): \$35. **Sample: free.**

27



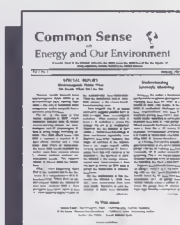
Timely and provocative . . . informative and visionary . . . **ORION** examines the interaction between people and nature and features programs for positive environmental change. Through science, art and the humanities, Orion points to the connections between nature and human culture, social policy and environmental health—both local and global. Each issue's special section focuses on a theme. 4 issues: \$14. **Sample: \$3.**

28



AMERICAN FARMLAND is the quarterly award-winning magazine of the American Farmland Trust (AFT). Compelling text and color photography present the latest information on the challenges confronting agricultural resources and the techniques being used to save them. A must for all who care about farmland. 4 issues (includes membership in AFT): \$15. **Sample: free.**

29



COMMON SENSE ON ENERGY AND OUR ENVIRONMENT is the newsletter for independent thinkers who refuse to let their environmental agenda be set by others. It is the only newsletter that explores all aspects of the scientific, technical, economic, and political components of energy and environmental issues. 12 issues: \$29. **Sample: \$2.**

30



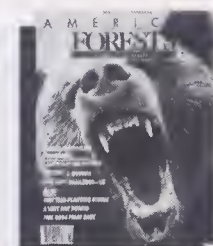
AUDUBON ACTIVIST—For the environmentalist who wants to take action on pressing environmental issues. A monthly newsjournal for members of the National Audubon Society, it provides thorough reports on environmental news and tips on how to become involved in those issues. 11 issues: complimentary with \$20 Audubon membership. **Sample: free.**

31



CALYPSO LOG, a full-color bimonthly magazine—sent to all members of The Cousteau Society—that features reports on society expeditions and environmental issues, interviews with leading thinkers, photography by the Cousteau team and much more. 6 issues (includes individual membership to The Cousteau Society): \$20. **Sample: \$1.**

32



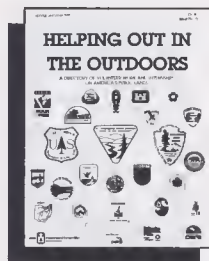
AMERICAN FORESTS—the nation's most popular and influential magazine on environmental benefits of trees and forests. It presents the latest issues, lifestyles, how-to information, adventures and travels. Published bimonthly since 1894. 6 issues: \$24. **Sample: free.**

33



DOLPHIN LOG, available to family members of The Cousteau Society, is a spectacularly illustrated, award-winning, bimonthly magazine which introduces young readers to life in and around the sea. Its fascinating stories, facts, games and experiments can be shared by the entire family. 6 issues (includes Family membership to the Cousteau Society as well as the Cousteau Society publication *Calypso Log*): \$28. Sample: \$1.

34



HELPING OUT IN THE OUTDOORS is the annual directory published by the American Hiking Society, listing a wide variety of over 2,000 volunteer jobs. Some of the available volunteer positions even supply housing, offer reimbursement for food and/or travel expenses, provide on-the-job training or academic credit. Annual publication: \$5. Sample: \$3.

35



FISH AND WILDLIFE REFERENCE SERVICE NEWSLETTER is a listing of new research in fish and wildlife management and includes notes about upcoming meetings and tips on retrieving information. The Reference Service provides copies of reports as well as literature searches. The Newsletter is published 4 times per year and copies are free. Sample: free.

36

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Photo: Todd Powell/Profiles West

Trekking with llamas in the wilderness of the Gore Mountain Range in Colorado . . .

Gentle Passion

WILDFLOWERS & WILDERNESS VIA LLAMA
IN THE COLORADO ROCKY MOUNTAINS

BY JC LEACOCK

The weather looked foul that morning as we loaded up the stock, making sure to balance the specially designed packs for the llamas' safety and comfort. Dark gray clouds swept over the 12,000-foot valley at tremendous speed. Curtains of rain could be seen over 14,092-foot Snowmass Mountain in the Snowmass/Maroon Bells Wilderness of Colorado. Thunder rumbled in the distance. We were in for something

wet and wild. Despite the threat of discomfort, the mood of the group, including our long-necked, woolly beasts, was upbeat and expectant. After all, the rain was just another wondrous aspect of this pristine environment we were experiencing.

The storm hit just as we were descending into the flower fields on the other side of the pass. As quickly and violently as it came, it departed, leaving us and the llamas steaming in the sun amongst the glistening flowers and tall green grass.

... where silence is striking and wildflowers abound.

Photo: Todd Powell/Profiles West



Photo: JC Leacock



Photo: Todd Powell/Profiles West



Photo: Todd Powell/Adventure Photo



Llamas packed with all the necessities make hiking at high elevation a breeze.

We had come to the Snowmass/Maroon Bells Wilderness in the western Colorado Rockies between Aspen and Crested Butte to photograph the splendid display of wildflowers that are abundant in the month of July. Had we carried all the photography equipment ourselves, along with our food, we would have been hefting 100-plus pound packs. At 12,000 feet, the gravity of one's own body is burden enough. Using llamas was a relief. Each 350 pound animal carried all of our food, clothing and sleeping gear. We were expected to carry simply the camera gear we needed during the hike and essentials such as rain gear, an extra jacket, first aid kit, etc.

The journey began at a rendezvous near Crested Butte, Colorado, in a corner of a high mountain valley with only mountains and wilderness beyond, with a promise of the most incredible wildflower fields ever to be seen.

The trail up the small valley to 12,000-foot Hasley Pass was colored with the subtle blue of columbine, the fiery red and orange of paintbrush and the distinct yellow of sneezeweed, in concentrations not witnessed before. These verdant fields continued for three glorious miles, the species changing their distribution as elevation increased.

The sky was a deep Colorado blue, the temperature in the mid-70s, with the afternoon clouds beginning to collect in fluffy balls. When we finally puffed our way up to the windy crest of Hasley Pass, the view was an expansive valley of verdant green, its lower depths covered with spruce and pine. Beyond loomed massive gray peaks. To the west, above the timberline, was a high lake basin, where we would make our camp.

Although wilderness, the area is not isolated. The wilderness bears some 88,000 recreation visitor days each year, according to the US Forest Service (a visitor day is counted as one visitor per 12-hour period in the wilderness), because of its proximity to the Colorado resort, Aspen. The intense summer popularity has fueled arguments for limiting use in the wilderness, including frequency of pack animals and size of parties. Although every wilderness area has different rules, some restrictions require packing in pellets instead of hay feed for horse and mules to cut down on the noxious weeds. It is acknowledged that llamas, because they are smaller, can cause less damage in fragile areas, but all pack animals must be handled correctly by their outfitters to truly limit damage, notes the Forest Service.

But, argue llama outfitters, the placid disposition of llamas also makes them easier to handle, especially given the



Photo: J. Leacock



Photo: Todd Powell/Profiles West



Photo: Todd Powell/Adventure Photo

The South American cousins of a camelid species, llamas are sure-footed and because of soft hoofs, easier on fragile tundra.



Photo: JC Leacock

The Snowmass Wilderness abounds in summer wildflowers, including Colorado columbines . . .

Photo: JC Leacock



Photo: JC Leacock

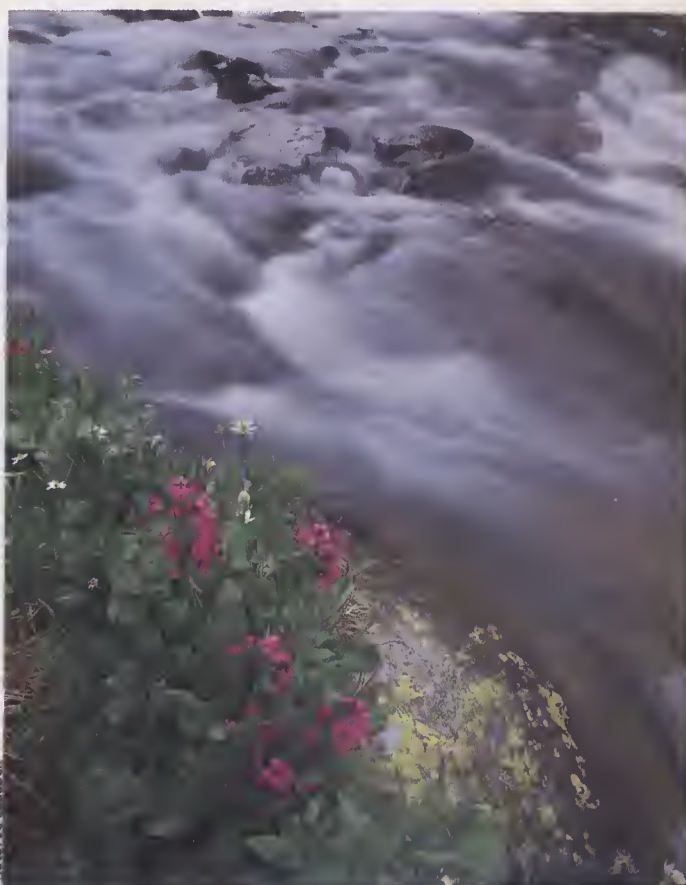


Photo: JC Leacock



... (clockwise) yellow and red paintbrush, lupine, bluebells, parry primrose next to a stream and daisies popping among aspen.



The brilliance of mountain wildflowers lasts only briefly where even a summer shower can become a blanket of snow.

sheer drops of mountain trails. Llamas seem at home gently picking their way through high altitude boulder fields that would give a horse pack outfitter a mountainous nightmare.

Even with the congestion of this particular wilderness, no other parties wandered into our high tundra valley—except a herd of elk that drifted in to partake of the green grasses and wildflowers.

Once in camp we unloaded the llamas, who were munching grass. They seemed content, even at this altitude, because, said Jerry Dunn, the llama outfitter, "This meadow is full of all kinds of tasty grasses, a llama smorgasbord."

Starting about 6,000 years ago, it is thought, the Incas and their precursors bred the woolly animals which are related to the wild camelid species called the guanaco and the vicuña. The animals were bred for their luxurious coats and to carry loads over rough, high altitude terrain in the Andes. In fact, some Indian tribes in the Peruvian Andes, such as the Quechan, still use them in much the same way as they did way back then.

"The llamas were valuable property," explained Dunn, "The Incas held them in high esteem. Recent archaeological digs in Chile have discovered mummified llama remains buried underneath the foundations of ancient Indian houses."

Llamas weren't used as pack animals in the United States until very recently. In the early 1900s they were banned from importation due to fear of hoof-and-mouth disease. The only llamas in the US at the time belonged to zoos and a few ranches. These were primarily what Dunn calls "pretty llamas," bred for their looks and not for carrying loads.

Finally in the late 1970s and early 1980s llama popularity exploded and llama packing on an outfitter level was started. Since then llama use has grown at a steady rate and outfitters can be found leading llama packing trips all over the country. Llama outfitters have attempted to breed a stronger, larger, less shaggy llama from a "pretty llama" gene pool; the working animals stand about six feet at the head and have relatively short hair compared to the fluffy llamas that more resemble the alpaca, known for its wool. The best working llamas can be found in Peru and Bolivia. Peru currently bans their exportation and Bolivia exports only pet quality stock.


Compared to horses and mules, llamas require little in the way of high protein foods such as alfalfa and oats; they can survive easily for long periods off just grass, bark and forage as well as very little water. Thus, their maintenance costs

are lower and they are easier to care for on the trail. The llama forages like deer, eating a little here and there, including bark, leaves and grass. A grazer, such as a horse, eats twice as much of whatever is in front of its face, lawnmower style.

Rather than the sharp "hoof" that horses have that tends to dig up as well as compact soil and the fragile tundra, llamas have a soft pad under the three toenails, somewhat similar to a dog's paw. This feature also adds considerably to the llamas famed sure-footedness. Tying the llamas up on these high tundra meadows, one would have expected significant environmental damage such as soil compaction, vegetation denudation and trampling. But two days later when it was time to leave, it looked as if the sharp-hoofed elk that had shared the mountain valley with us caused relatively more impact than the llamas.

After setting up camp, we set out to explore the grassy plateau upon which the little lake basin was perched. Enveloped by delicate white flowers, the lakes were small, their glossy smooth surface reflected the image of the distant Snowmass Mountain. Above the basin, a great ridge of mountains rose above our small and insignificant camp. To the west lay a long sweeping glacial valley. A scarp of red rock formed its western border. Maroon Peak, of postcard fame, nudged its majestic crown skyward in the distance.

Our days were full of insights and revelations. Rather than wandering far afield, we remained in the area of the lake basin, fine-tuning our sensitivity to the microcosmic world at knee level. The senses sharpened, and time slowed to a trickle. Hours were spent in a single small area, curiosity leading from one small universe to the next. Each photograph became a time warp of concentration.

Among the rocks at higher altitudes grew groups of Colorado's columbine, contrasting delicately with the barren slabs to which they clung. On the wetter north-facing, moss-covered rocks, the fragile pink flowers of moss campion stood out against the cold, gray rock. The green hillsides were graced with a wide variety of flowers including bluebells, paintbrush and queen's crown. In the pristine silence of the Colorado wilderness, where even a summer rainshower could become a snowshower glazing the high peaks, summer is all too brief. Still, the alpine world was alive with a dazzling but brief display of reproduction that, in a few weeks time, would be eclipsed by the onset of cold weather. 

Boulder, Colorado-based photographer and writer, JC Leacock specializes in environmental subjects.



HOW TO GET THERE

Although the Maroon Bells/Snowmass Wilderness area is beautiful, the area suffers from overuse due to its proximity to Aspen. A number of the wilderness areas in Colorado offer excellent places for viewing and photographing wildflowers and others are often much less used. The US Forest Service carefully monitors types of use allowed in order to protect the pristine experience of designated wilderness. The agency restricts the use of pack animals in the wilderness, including limiting the kind of hay that may be packed in for horse or mule feed.

For more information on Colorado wilderness, contact any of the following national forest offices:

White River National Forest
806 West Hallam
Aspen, CO 81611
(303) 925-3445

Grand Mesa, Uncompahgre & Gunnison National Forests Headquarters
2250 Hwy 50
Delta, CO 81416
(303) 874-7691

Routt National Forest
29587 West US Hwy 50
Steamboat Springs, CO 80487
(303) 879-1722

Arapahoe national Forest
240 W. Prospect Rd.
Ft. Collins, CO 80526
(303) 498-1100

For more information about packing with llamas, contact the following outfitter association:

Colorado Llama Outfitters and Guides Association
30361 Rainbow Hills Rd.
Golden, CO 80401
(800) 462-8234

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CIRCLE NO. 16 ON READER SERVICE COUPON PAGE 93

Every year, Americans dump 67 million pounds of chemical pesticides on their lawns or gardens, or some five to 11 pounds per acre. Many of these chemicals are believed to cause birth defects, liver or kidney damage or harm to the nervous system. Others are suspected carcinogens. According to a 1987 National Academy of Sciences (NAS) study, 1.4 million Americans may develop cancer due to exposure to pesticides.

Yet the average citizen's infatuation with chemical pesticides continues unabated. Homeowners use from four to eight times as many chemical pesticides per acre as farmers, and that disparity is increasing. According to Environmental Protection Agency and NAS data, home lawn pesticide use is rising 5 percent to 8 percent a year, while farm use is falling 3 percent annually.

Enter green consumerism—a hot topic these days, and with good reason. According to polls, some 70 percent to 80 percent of Americans claim to be environmentalists, and 50 percent or more say that environmental issues affect their buying decisions. Even if we cut these figures in half because of the "halo effect" (people want to seem more virtuous than they are), the numbers remain sizeable. How likely is green consumerism, the widely-hailed "movement of the 1990s," to reverse the American homeowner's traditional reliance on chemical pesticides?

We start with the premise that, by all rights, green lawn and garden products should be a magnet for green consumers:

- Purchasers of fertilizers, pesticides, herbicides and the like are homeowners; homeowners are relatively affluent; and affluent people tend to be more environmentally conscious than most because they can afford to be.
- The closer an environmental issue hits to home, the greener people get. Heard of the NIMBY ("Not In My Back Yard") syndrome? Well, you don't get any IMBYer than lawn and garden products.
- People buy green products because it allows them to feel as if they are actually having an impact on the environment. Lawns and gardens are standing (or perhaps recumbent) invitations to homeowners to make a difference.
- Green lawn and garden products have a direct and discernible impact on—that's right—the environment. What's greener than grass?

Yet buying patterns remain, on the whole, brown. 1991 sales of truly green—that is, naturally-derived—fertilizers and pest-control products are expected to total a mere 4 percent of the overall \$1.5 billion

fertilizer/pest-control market. Companies like Eden Prairie, Minnesota-based Ringer Corp., Safer Corp. (recently acquired by Ringer) and Virginia-based Necessary Trading Company have, to date, largely failed in their quest to bring naturally-derived lawn and garden products to every gardener.

From an environmental perspective there are, crudely, three cultures in the US. At one extreme are the "browns." These people, who probably comprise one-quarter to one-half of the adult population, don't give a hoot about the environment. For green product suppliers, they are a lost cause.

At the other extreme are the "visionary greens." This group, which comprises perhaps 10 percent to 15 percent of the population, has made a "paradigm shift" to a holistic value system. Visionary greens believe that you manage your lawn and garden by nurturing the entire ecosystem.



Illustration: Scott Krauer

THINKING LIKE AN EARTHWORM

By Carl Frankel

Bill Wolf, President of Necessary Trading Company and a former disciple of the ground-breaking inventor and philosopher Buckminster Fuller, speaks as a visionary green when he says: "Being green isn't just a matter of substituting a green lawn or garden product for one that's less green. Once you use one green product, it becomes necessary to integrate other green products into the operation. This expansion continues until finally you realize that you, too, are part of the system. Being green isn't just about products. It's about a mind-set change."

Wolf's formula for judging if a lawn-care product is green also reflects his visionary-green orientation: "What would an earthworm think about it?"

It's relatively easy for visionary-green companies like Ringer and Wolf's Necessary Trading Company to sell to visionary greens: They are preaching to the converted. But the "mainstream greens" who occupy the large

middle ground between the visionaries and the browns are a different story.

Mainstream greens are concerned about the environment but their commitment is selective, not absolute. When mainstream greens buy a new product, it's because they like the product, not because they've tripped the light holistic.


If substantial inroads are to be made into this country's chemical lawn-and-garden culture, it is the mainstream greens who must be reached. First, however, some serious marketing obstacles must be overcome.

On a per-purchase basis, green lawn products are more expensive than their alternatives. Also, they often require multiple applications to produce results—and those results are not always immediately visible, as is more often the case with less green offerings. For mainstream greens who have come to expect the no-muss, no-fuss quick fix, these features can be a major turn-off.

Advocates of organic lawn- and garden-care argue that their approach is more effective, safer to use, of course better for the local ecosystem and for the wider environment and, in the long run, less costly, too. The challenge is to get the message to consumers. "Teaching people something new is very difficult," acknowledges Rob Ringer, Public Affairs Coordinator for Ringer Corp. Yet he is hopeful. "A lot of people are waking up to the fact that the products they're using might be dangerous for themselves or the environment. We're stressing that if there's even a question mark about a product, why take a chance?"

In the last year, virtually every major industry player and a host of minor ones have come out with at least one organic offering. Even California-based Ortho Consumer Products, the nation's leading lawn-and-garden herbicide supplier and a division of Chevron Chemical Company with a heavy stake in petrochemicals, has come out with a green product—Orthoganics, a line of organic herbicides.

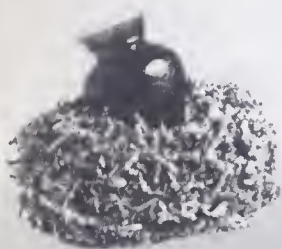
For the foreseeable future, chemical pesticides will probably continue to be the product of choice in most backyards. Still, with the current favoring green consumerism and the industry adding wind to the sails with its recent embrace of green products, the next few years seem sure to bring a surge in sales of naturally-derived lawn and garden products.

Will the industry's educational campaign bring equally strong increases in the number of visionary greens? That's hard to say. It's one thing, after all, to persuade consumers to buy a green product, and quite another to get them thinking like earthworms. 

Carl Frankel is editor and publisher of the Connecticut-based Green MarketAlert, a newsletter which analyzes business impacts of green consumerism.

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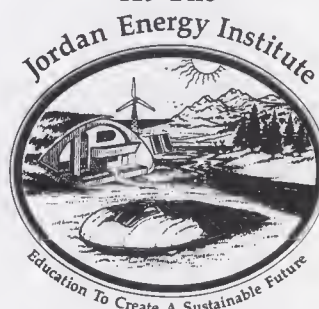
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CIRCLE NO. 14 ON READER SERVICE COUPON PAGE 93

GREEN PRODUCTS REVIEW



FOOD DIGESTER

SINCE FOOD WASTES ACCOUNT for some 25 percent of the garbage we put in landfills, perhaps you want to start a compost pile. But where to put the pile of rotting garbage? Maybe your small yard doesn't have an out-of-the-way place to put your food wastes. Or maybe tending to a pile of rotting garbage, although environmentally the "right" thing to do, isn't something you find yourself having time for.

Now there's a product to help you dispose of food wastes and create compost—Green Cone, the "Food Waste Digester." The hassle-free Green Cone can even be put in a box filled with dirt. The composter consists of a basket-like digester which is placed in the ground and a solar cone with lid which sits over it that heats in the sun and accelerates the decomposition process. The outer cone and lid are made of polyethylene specifically formulated to enhance transmission of solar energy. It stands just over two feet above the ground. The inner cone and basket section are made of 100 percent recycled polyethylene. The cone comes with an accelerator powder containing naturally occurring micro-organisms and nutrients.

The cone doesn't release odors since air circulates in the cone. And since there is no smell, the cone does not attract flies, wasps or bees. It is recommended that the cone be emptied every two or three years to remove any nondegraded compounds. The food wastes can then be used for compost in your garden. The Green Cone is available for \$79.95 plus shipping. For more information contact Eco Atlantic, 2200-C Broening Hwy., Baltimore, MD 21224, (301) 633-7500, (800) 253-1119.

OIL FILTER SAVER

SOME 800,000 AUTOMOBILE OIL filters are discarded per day in the United States, 292 million per year, according to System 1 Filtration of California. If your car lasted 100,000 miles and you changed your oil filter every 3,000 miles, you'd use 34 filters in the life of your car. Since oil filters cost at least \$5 each, you're spending \$170 on oil filters alone. Most oil filters retain as much as one-third of the oil, and this oil, along with toxic acid and heavy metal contaminants, is thrown away with the filters—usually into the trash can, hazardedly polluting landfills.

System 1 Filtration offers reusable oil and gas filters for almost every type of car on the road. The filters last "indefinitely." They can be cleaned with soap and water or with your choice of environmentally sensitive degreasers. The oil removed from the filter can be dropped off at a service station or recycling center with the rest of the oil you've removed from your oil reservoir. System 1 filters are available across the country in auto parts stores for about \$104 retail. And yes, you can still take your car to your local Super Jiffy Quick Fast Speedy Greasy Oil Change Lube Shop. For more information contact McMullen Design, 15305 S. Normandie Ave., Gardena, CA 90247, (213) 515-1701.

HAVE YOU BEEN putting off refinishing that green and pink striped dresser you got at a yard sale, just because you don't like the goop you spread on it to remove the paint? You don't like it with good reason—most strippers contain methylene chloride which produces toxic fumes, methanol, toluene and acetone, all of which are being reviewed by some state legislatures for their carcinogenicity.

Creative Technologies Group offers Woodfinisher's Pride paint stripping gel and varnish stripping gel. The gels are nontoxic, nonflammable, biodegradable, nonirritating—and they work. They clean up with soap and water, smell like citrus and come in "recyclable" containers. The strippers remove old paint and varnish in 30 minutes and regular stripping tools can be used. The active ingredient in both gels is N-methyl-2-pyrrolidone (NMP), which has been in industrial use for about 20 years. Woodfinisher's Pride gels contain no water so they won't buckle your wood or loosen joints. It is recommended, however, that

GREEN STRIPPER



you wear gloves to avoid some very dry hands.

Woodfinisher's Pride was compared to 3M's Safest Stripper which makes similar claims about safety and nontoxicity. Safest Stripper is a water-based product using dibasic ester (DBE) as an active ingredient. It does not harm your hands, but it is nec-

essary to reapply the gel a second time to fully remove the paint.

Either one of these alternative strippers is better than a toxic one, but Woodfinisher's Pride worked more effectively. Woodfinisher's Pride will recycle their containers and return \$1.00 to customers if there are no recycling centers in local communities. Both strippers are available in hardware, do-it-yourself stores and paint stores. A 64-oz. container of Woodfinisher's Pride retails for \$14.99. For more information contact the Softness Group, 250 Park Ave. S., New York, NY 10003, (800) 321-2250. A gallon of Safest Stripper retails for approximately \$20. For more information contact Consumer Relations, 3M D14 Division, 3M Center, 515-3N-02, St. Paul, MN 55144, (612) 733-1110, Ext. 55.

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THE ANNUAL US LOOSE-FILL packaging market is \$80 million—most of it polystyrene. And the total packaging market is approximately \$800 million.

What looks, works and packages like polystyrene without using petroleum or CFCs? Eco-Foam

starch-based loose fill. It works exactly like those little polystyrene peanuts. Eco-Foam, created by American Excelsior Co., contains 95 percent constarch made from a special hybrid corn specially grown and processed in the midwest. It also contains a small

amount of synthetic additives commonly used in adhesives, textiles and paper coatings. Every bit of the corn kernel is utilized since all the by-products are sold to processors who convert them into corn oil or animal feed. The starch from one bushel of corn makes nearly three-and-a-half, 12-cubic-foot bags of Eco-Foam. The corn starch puffs in a heat and steam process much like puffed cereals. Eco-Foam is safe for food products, creates no static cling, is nontoxic when combusted and dissolves in water. It can even be composted. Unlike popcorn or paper, it fits into current packaging operations. Eco-Foam costs about two and a half times more than a comparable amount of polystyrene peanuts, yet it is cheaper than other "natural" packaging materials. For more information contact American Excelsior Co., 850 Ave. H, E., P.O. Box 5067, Arlington, TX 76005-0677, (800) 777-7645, (817) 640-1555.

ECOFUTURE

REAL RICE PAPER

If an acre produces 4 tons of rice, some 3 tons of rice straw are also created. This straw is traditionally burned, polluting the air with a smoke which is believed to be hazardous.

Pure Harvest Corp., a privately owned food and agricultural technology company founded in 1988, has found a use for rice straw: paper manufacturing. After the company developed a new method of

In this decade of the environment, entrepreneurs are creating a growing range of environmentally sensitive products and concepts. Individuals are taking chances to make changes. Items that respond to a current concern—either offering a solution to a product or practice that harms the environment, or creatively using low-impact or recycled materials—are springing up all over the country, being introduced by people who have decided they can make a difference. ECOFUTURE will introduce you to a host of new concepts that are still in the works or haven't hit the market yet.

Hubbard presented the idea to an Oakland, California, fine-art papermaking company called Magnolia Editions. The

company produced several samples of different paper types, including brown paper, like corrugated cardboard and paper-board. The rice fibers can also be mixed with other fibers, as is commonly done with wood pulp paper, to create different types of paper, like writing and parchment. According to Dorothy Cox of Magnolia Editions, "We try to use the natural characteristics of the fiber. We use an alkaline process that has been used since 1610." The rice fibers are not bleached, and a

naturally occurring pigment can be used to tint the paper.

The paper-making ventures are still in the testing stages. Magnolia Editions makes 3-pound batches of pulp to test various consistencies and types of paper. Hubbard is hoping to package his Pure Harvest rice in boxes made from rice straw. He is currently looking for small paper plants to mass produce his paper. By developing paper products from grain straw, Pure Harvest hopes to significantly reduce both air pollution and demand for forest products. For more information contact Pure Harvest, P.O. Box 10287, Napa, CA 94581, (707) 224-6550.



organic rice farming which reduces water usage by at least 25 percent, it became evident about a year and a half ago to Ernest Hubbard, president of Pure Harvest, that there was a growing controversy about burning rice straw that wouldn't go away.

The company sponsored the Rice Straw Utilization Workshop in June 1990, attended by scientists and rice growers, to find uses for the straw. "It was a challenge to find interesting and economical uses of rice straw," said Hubbard. "We got a variety of ideas, including mushroom compost, fuel and paper." Hubbard's research showed that paper was more interesting since there were so many applications.

PERSEUS

When students and young faculty members at Massachusetts Institute of Technology (MIT) started the Daedalus project two years ago, they didn't know where it would lead. It became a record-breaking human-powered flying machine named for the Greek mythological figure Daedalus, who, it can be argued, was the first aeronautical engineer, crafting a flying apparatus to escape King Minos. MIT's Daedalus flew almost 75 miles from Crete to the island of Santorini—an extraordinary achievement for human-powered flight.

The success of the Daedalus project inspired then-student John Langford and other students, scientists and engineers to design and begin to build Perseus, an efficient, unpiloted, high-altitude flying machine to conduct scientific research. Langford founded Aurora Flight Sciences, Inc. in 1989 to develop an airplane which could measure chemistry in the lower stratosphere, at an altitude up to 85,000 feet. Designs call for Perseus to be remotely controlled from the ground, light-weight (about 800 pounds), propeller-driven and reliable. Perseus is intended to aid such studies as ozone

depletion and climate changes, and to clock hurricanes.

It is hoped that the plane will provide frequent, flexible access to the lower stratosphere for small groups of scientists who now rely on NASA satellites or balloon-gathered information. It is difficult for the independent scientist to conduct specific studies unless he or she is affiliated with NASA, since lower-stratosphere piloted planes are unavailable or too expensive. Perseus is projected to be relatively inexpensive. It will cost about \$750 an hour to fly. The initial project, including research and production, has a \$2.2 million price tag. Although balloon-launched tests are less expensive, they are dependent on winds, do not ensure the return of the equipment and are not reusable.

So far, Aurora Flight Sciences has built a "Proof of Concept" prototype which will be tested this year. Different, small internal combustion engines are being tested to run on such fuels as gasoline or methane and oxygen in a closed, nonpolluting cycle. NASA has agreed to build two or three Perseus planes over three years. Brian Duff, director of external affairs and personnel at Aurora, predicts that the price tag on the planes will go down after the completion of the first couple. The NASA agreement is hoped to be underway by September, and would help Perseus get off the ground. For more information contact Aurora Flight Sciences, P.O. Box 11296, Alexandria, VA 22312, (703) 823-0497.



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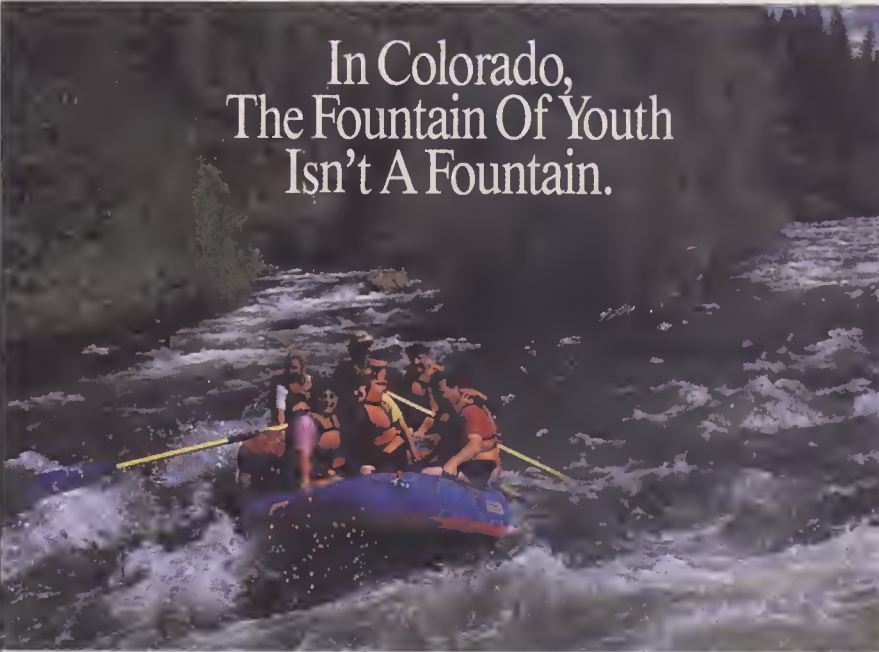


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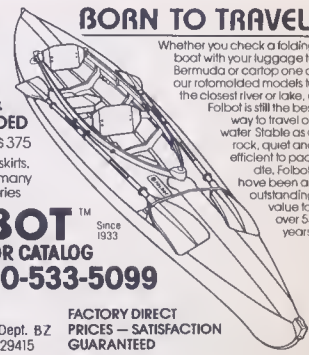
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COOL, CLEAN WATER

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Contamination from Idarado Mining and Milling complex in southwestern Colorado, for example, is so complete that the ground water, surface water, soil and air in the Telluride and the Red Mountain districts contain an "incredible array of heavy metals and other hazardous substances," said the Colorado office of the Environmental Defense Fund in an assessment report. The damage done to the environment by the Idarado mine complex alone, the study concluded, was so extensive that "no matter how heroic the cleanup effort, environmental standards cannot be met." The cost of the proposed "heroic" cleanup efforts reached \$2.9 billion before they were dismissed as too costly.

The Mike Horse mine and its effluents (above), in Helena National Forest, is one of five non-coal mine sites designated for cleanup by Montana's Abandoned Mine Reclamation Bureau this year. In an attempt to reduce the acid drainage, the bureau has put an extensive plan into action that involves constructing wetlands to help naturally and organically filter out the heavy metals, removing tailings from the flood plains, encapsulating and relocating the hazardous wastes and reshaping the disrupted landscape. The bureau was allocated \$407,000 of state funds in December 1990 to begin the cleanup.



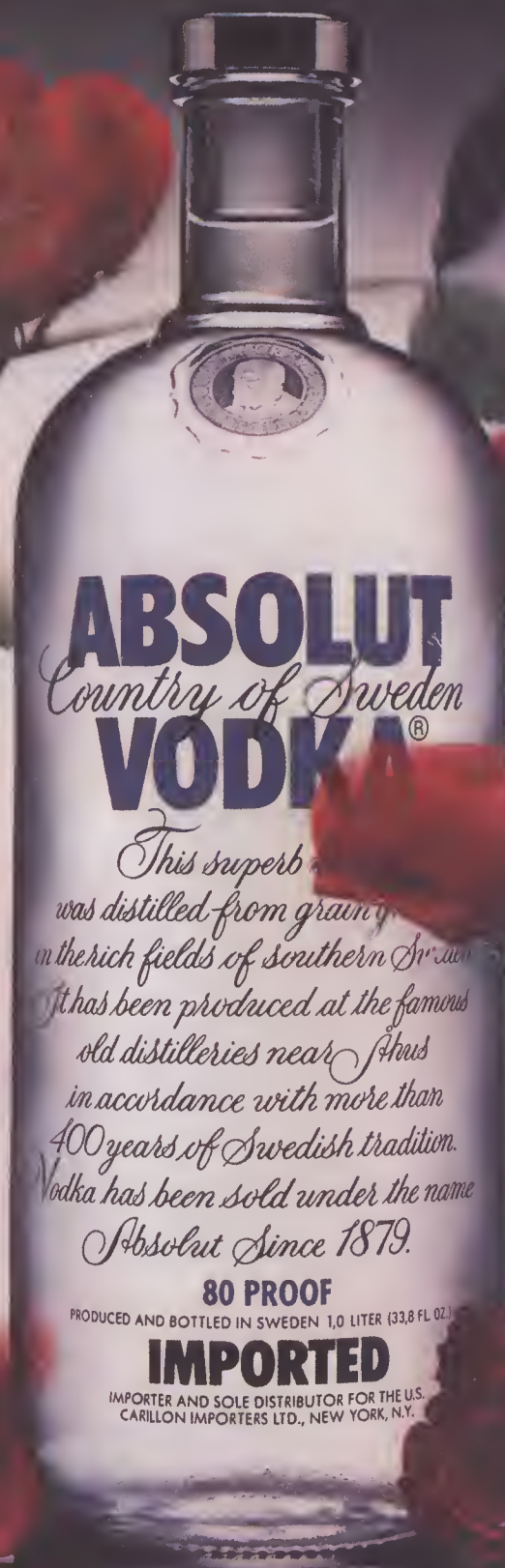
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